



Jan 20 2009
2:22PM

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Attorneys for Defendant,

NORTHROP GRUMMAN SYSTEMS CORPORATION

(erroneously named as Northrop Corporation and Northrop
Grumman Corporation)

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF ORANGE, CIVIL COMPLEX CENTER

ORANGE COUNTY WATER DISTRICT,

Plaintiff,

v.

NORTHROP CORPORATION; NORTHROP
GRUMMAN CORPORATION; AMERICAN
ELECTRONICS, INC.; MAG AEROSPACE
INDUSTRIES, IC.; GULTON INDUSTRIES,
INC.; MARK IV INDUSTRIES, INC.; EDO
CORPORATION; AEROJET-GENERAL
CORPORATION; MOORE BUSINESS
FORMS, INC.; AC PRODUCTS, INC.;
FULLERTON MANUFACTURING
COMPANY; FULLERTON BUSINESS PARK
LLC; and DOES 1 through 400, inclusive,

Defendants.

AND RELATED CROSS-COMPLAINTS

CASE NO. 04CC00715

(Assigned for all purposes to Hon.
Thierry P. Colaw, Dept. CX-104)

**NOTICE OF LODGMENT IN
SUPPORT OF NORTHROP
GRUMMAN SYSTEMS
CORPORATION'S MOTION FOR
SUMMARY ADJUDICATION OF
ISSUE REGARDING PLAINTIFF'S
CLAIMS FOR PUNITIVE DAMAGES**

DATE: April 10, 2009

TIME: 10:30 a.m.

DEPT: CX104

Defendant NORTHROP GRUMMAN SYSTEMS CORPORATION hereby lodge with
this court in support for their motion for summary adjudication regarding Plaintiff's claims for
punitive damages, the following:

1. Attached hereto as Exhibit "1" is a true and correct copy of relevant portions of the
deposition transcript of Roy Herndon, OCWD's Person Most Knowledgeable of Northrop's 301

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1 E. Orangethorpe, Anaheim Site (Y-12), dated June 4, 2007 (Volume 1).

2 2. Attached hereto as Exhibit "2" is a true and correct copy of relevant portions of the
3 deposition transcript of Maneck Chichgar of the Santa Ana Regional Water Quality Control
4 Board, dated December 11, 2007 (Volume 1).

5 3. Attached hereto as Exhibit "3" is a true and correct copy of relevant portions of the
6 deposition transcript of Robert Holub of the Santa Ana Regional Water Quality Control Board,
7 dated June 20, 2008 (Volume 4).

8 4. Attached hereto as Exhibit "4" is a true and correct copy of plaintiff's First
9 Amended Complaint filed on or about April 8, 2005.

10 5. Attached hereto as Exhibit "5" is a true and correct copy of relevant portions of
11 Plaintiff's Responses to Northrop's Special Interrogatories (Set One).

12 6. Attached hereto as Exhibit "6" is a true and correct copy of relevant portions of
13 Plaintiff's Responses to Northrop's Special Interrogatories (Set Two).

14 7. Attached hereto as Exhibit "7" is a true and correct copy of Northrop Corporation's
15 1993 Form 10K report filed with the Securities and Exchange Commission.

16 8. Attached hereto as Exhibit "8" is a true and correct copy of Northrop Corporation's
17 2000 Form 10K report filed with the Securities and Exchange Commission.

18 9. Attached hereto as Exhibit "9" is a true and correct copy of Northrop Corporation's
19 2007 Form 10K report filed with the Securities and Exchange Commission.

20 10. Attached hereto as Exhibit "10" is a true and correct copy of Plaintiff's Motion to
21 Sever Cross-Claims filed March 13, 2008.

22 11. Attached hereto as Exhibit "11" is a true and correct copy of relevant portions
23 Northrop's Preliminary Investigation Report to RWQCB, bearing Bates # OCWD-VOC 1093.

24 12. Attached hereto as Exhibit "12" is a true and correct copy of a March 15, 1988
25 RWQCB Letter to Northrop, bearing Bates # OCWD-VOC 1091.

26 13. Attached hereto as Exhibit "13" is a true and correct copy of a RWQCB Letter to
27 Northrop dated September 21, 1990 Re Anodic Room Soils Investigations, bearing Bates # NGSC
28 6326.

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1 14. Attached hereto as Exhibit "14" is a true and correct copy of a September 24, 1990
2 RWQCB Letter, bearing Bates # NGSC 6328.

3 15. Attached hereto as Exhibit "15" is a true and correct copy of relevant portions of
4 the 1991 AWD Technologies Soil Remediation and Closure Report.

5 16. Attached hereto as Exhibit "16" is a true and correct copy of a 1991 RWQCB
6 Closure Letter, bearing Bates # NGSC 7139.

7 17. Attached hereto as Exhibit "17" is a true and correct copy of an August 25, 1993
8 RWQCB letter to OCWD, bearing bates # OCWD-VOC 032204.

9 18. Attached hereto as Exhibit "18" is a true and correct copy of a September 17, 1993
10 letter from William Mills of OCWD to the RWQCB regarding Northrop monitoring wells, bearing
11 Bates # OCWD/VOC 000950.

12 19. Attached hereto as Exhibit "19" is a true and correct copy of relevant portions of
13 the deposition transcript of Dave Mark, OCWD's Person Most Knowledgeable of Northrop's 501
14 E. Orangethorpe, Anaheim Site (EMD), dated November 8, 2007 (Volume 1).

15 20. Attached hereto as Exhibit "20" is a true and correct copy of a August 4, 1992
16 Orange County Water District Memorandum to Dennis Merklin of the Santa Ana Regional Water
17 Quality Control Board Regarding Comments on AWD Technologies Soil Investigation at
18 Northrop Site in Anaheim, bearing Bates # OCWD VOC 000987, also marked as exhibit 10 to
19 Dave Mark 11-8-07 deposition Regarding Northrop EMD.

20 21. Attached hereto as Exhibit "21" is a true and correct copy of relevant portions of
21 the deposition transcript of Alec Uzemeck, dated April 22, 2008.

22 22. Attached hereto as Exhibit "22" is portions of a 1995 report titled, Summary of Site
23 Investigations, prepared by Smith Environmental, bearing bates # OCWD/VOC 00925.

24 23. Attached hereto as Exhibit "23" is a true and correct copy of Regional Water
25 Quality Control Board ("RWQCB") Letter dated Aug. 9, 1995, bearing Bates # OVWDVOC 905.

26 24. Attached hereto as Exhibit "24" is a true and correct copy of a 2004 Groundwater
27 Monitoring Well Location Map prepared by EEC regarding Northrop's former Y-12 site, bearing
28

1 bates # OCWDVOC 20562.

2 25. Attached hereto as Exhibit "25" is a true and correct copy of an EEC 2004 Fourth
3 Quarter Groundwater Monitoring Report for Y-12, bearing Bates # RWQCB 6714.

4 26. Attached hereto as Exhibit "26" is a true and correct copy of an August 25, 1998
5 letter Re Installation of Additional Wells, bearing Bates # OCWD-VOC 864.

6 27. Attached hereto as Exhibit "27" is a true and correct copy of an August 31, 2000
7 letter Re Additional Off-Site Investigation, bearing Bates # OCWD-VOC 841.

8 28. Attached hereto as Exhibit "28" is a true and correct copy of Cleanup & Abatement
9 Order No. R8-2003-108, bearing Bates # OCWD-VOC 8967.

10 29. Attached hereto as Exhibit "29" is a true and correct copy of the February 3, 2004
11 RWQCB Approval of Workplan for Installation of Wells, bearing Bates # OCWD-VOC 9196.

12 30. Attached hereto as Exhibit "30" is a true and correct copy of a RWQCB letter to
13 Northrop dated July 14, 2004, bearing Bates # OCWD-VOC 9192.

14 31. Attached hereto as Exhibit "31" is a true and correct copy of Northrop's October
15 2004 Groundwater Remediation Plan (URS Corporation), bearing Bates # OCWD-VOC 20206.

16 32. Attached hereto as Exhibit "32" is a true and correct copy of an RWQCB letter to
17 Northrop dated April 19, 2006, bearing Bates # OCWDVOC 47171.

18 33. Attached hereto as Exhibit "33" is a true and correct copy of a June 12, 2006 letter
19 from Arcadis to the RWQCB regarding Northrop's Pilot Test Study at Northrop's former Y-12
20 site, bearing bates # OCVOCRWQCB003261.

21 34. Attached hereto as Exhibit "34" is a true and correct copy of Northrop's March
22 2007 Soil Vapor Extraction Pilot Test Studies Report, bearing Bates # OCWDVOC 63322.

23 35. Attached hereto as Exhibit "35" is a true and correct copy of an October 2, 2008
24 RWQCB letter to Haltmeyer (Northrop) Re Approval of Remedial Action Plan, bearing bates #
25 NGSC 47894.

26 36. Attached hereto as Exhibit "36" is a true and correct copy of relevant portions of
27 the deposition transcript of Roy Herndon, OCWD's Person Most Knowledgeable of Northrop's
28 301 E. Orangethorpe, Anaheim Site (Y-12), dated June 5, 2007 (Volume 2).

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1 37. Attached hereto as Exhibit “37” is a true and correct copy of relevant portions of
2 the deposition transcript of Robert Holub of the Santa Ana Regional Water Quality Control Board,
3 dated June 19, 2008 (Volume 3).

4 38. Attached hereto as Exhibit “38” is a true and correct copy of relevant portions of
5 the July 2002 Facility Closure Plan for Northrop’s Kester Solder site submitted to the City of
6 Anaheim Fire Department.

7 39. Attached hereto as Exhibit “39” is a true and correct copy of relevant portions of
8 Northrop’s Verified Responses to OCWD’s Seventh Set of Special Interrogatories propounded to
9 Northrop.

10 40. Attached hereto as Exhibit “40” is a true and correct copy of a September 17, 2002
11 City of Anaheim Letter to the Department of Toxic and Substance Control (“DTSC”) Re PCE
12 Release at Northrop’s Kester site.

13 41. Attached hereto as Exhibit “41” is a true and correct copy of a May 18, 2006
14 RWQCB letter Regarding the Approval to Remediate Soil at Kester, bearing Bates # OCWD VOC
15 63841.

16 42. Attached hereto as Exhibit “42” is a true and correct copy of an April 12, 2007
17 RWQCB letter to the Orange County Sanitation District regarding water discharge & remediation
18 system design at Northrop’s Kester Site.

19 43. Attached hereto as Exhibit “43” is a true and correct copy of Orion
20 Environmental’s February 2008 Bi-Weekly Status Report Kester Anaheim Project, bates #
21 ORION 5959.

22 44. Attached hereto as Exhibit “44” is a true and correct copy of Orion
23 Environmental’s January 23, 2008 Invoice regarding the Kester Anaheim Project, bates # Orion
24 1959.

25 45. Attached hereto as Exhibit “45” is a true and correct copy of relevant portions of an
26 October 10, 2008 3rd Quarter groundwater Monitoring & Remediation Report, produced by
27 Northrop, bearing Bates # NGSC 47470.

28 46. Attached hereto as Exhibit “46” is a true and correct copy of relevant portions of
4826 1038 0289.1

1 the deposition transcript of Ken Erwin, dated February 11, 2008 (Volume 1).

2 47. Attached hereto as Exhibit "47" is a true and correct copy of relevant portions of
3 the deposition transcript of Ken Erwin, Vol II, dated February 12, 2008.

4 48. Attached hereto as Exhibit "48" is a true and correct copy of relevant portions of
5 the September 1992 RWQCB Soil Gas Survey Vicinity of Former Moore Business Forms Site,
6 Bates # RWQCB 15025 15047.

7 49. Attached hereto as Exhibit "49" is a true and correct copy of relevant portions of
8 William Dennis Merklin of the Santa Ana Regional Water Quality Control Board, dated January
9 15, 2008 (Volume 2).

10 50. Attached hereto as Exhibit "50" is a true and correct copy of relevant portions of
11 the deposition transcript of Maneck Chichgar, Vol II, dated January 16, 2008.

12 51. Attached hereto as Exhibit "51" is a true and correct copy of Plaintiff's Response to
13 Northrop Grumman Systems Corporation's Request for Admissions, Set Two served June 19,
14 2008.

15 52. Attached hereto as Exhibit "52" is a true and correct copy of relevant portions of
16 the deposition transcript of Dave Mark, Volume III, dated January 30, 2008.

17 53. Attached hereto as Exhibit "53" is a true and correct copy of a December 1991
18 letter, bates # NGSC 39165, identifying *Tom Daly* as an Attorney within Northrop's
19 Environmental Law Department.

20 54. Attached hereto as Exhibit "54" is a true and correct copy of an October 1988
21 letter, bates # NGSC 30295, which identifies *Georgetta A Wolff* as the Division Legal Counsel for
22 Northrop Corporation.

23 55. Attached hereto as Exhibit "55" is a true and correct copy of a 1991 memo
24 regarding a meeting with the RWQCB, produced by OCWD at Bates # OCWD-VOC 1058
25 identifying *Brad Gow* and *Walter Woo* as an employee of AWD Technologies.

26 56. Attached hereto as Exhibit "56" is a true and correct copy of relevant portions of
27 the deposition transcript of David F. Wong, dated April 21, 2008.

28 57. Attached hereto as Exhibit "57" is a true and correct copy of relevant portions of
4826 1038 0289.1

1 the deposition transcript of R. Holub dated May 27, 2008 (Vol. 1).

2
3 Dated: January 19, 2009

LEWIS BRISBOIS BISGAARD & SMITH LLP

4
5 By: /s/ R. Gaylord Smith
6 R. Gaylord Smith
7 Attorneys for Defendant
8 NORTHROP GRUMMAN SYSTEMS CORPORATION
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EXHIBIT 1

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF ORANGE, CIVIL COMPLEX CENTER

ORANGE COUNTY WATER DISTRICT,)
Plaintiff,)
vs.) No. 04CC00715
NORTHROP CORPORATION, et al.,) VOLUME I
Defendants.)
-----)
AND ALL RELATED CROSS ACTIONS.)

Deposition of ROY L. HERNDON, at
650 Town Center Drive, Costa Mesa,
California, commencing at 9:34 A.M.,
Monday, June 4, 2007 before
Cathryn L. Baker, CSR No. 7695.

VERITEXT NATIONAL COURT REPORTING COMPANY
1845 Walnut Street, 15th Floor
Philadelphia, PA 19103

1 associated specifically during their period of
2 operation, did they knowingly release contaminants to
3 the soil, I haven't seen documents that indicated that.

4 BY MR. SMITH

5 Q. That's what I was looking for, is whether 10:22 AM
6 their knowledge of the releases was after the fact or
7 during the fact.

8 A. All I have seen are documents that show after
9 the fact -- after the releases had occurred.

10 Q. I don't mean to limit my questions just to 10:22 AM
11 documents. Have you heard any stories or had any
12 information from any source that Northrop Grumman
13 personnel were ever aware that they were releasing VOCs
14 into the ground or groundwater at Y-12 at the time that
15 they were doing it?

16 MR. MILLER: Objection. Attorney-client
17 privilege.

18 You can answer the question excluding such
19 information. Go ahead.

20 THE WITNESS: And I would ask to clarify.
21 That is during their operations? During the period of
22 operation?

23 BY MR. SMITH

24 Q. Right. 10:23 AM

25 A. I have not heard any conversations of that.

10:23 AM

1 Q. Do you have any information that Northrop was
2 aware of any spills, accidental or intentional, of any
3 VOCs during the business operations in 1994 or before
4 that time?

5 MR. MILLER: Again, you can answer without
6 including any information from counsel.

7 MS. McKEITH: You mean excluding?

8 MR. MILLER: I hope I said excluding.

9 MR. SMITH: Either way is fine.

10 MR. MILLER: I said "without including."

11 THE WITNESS: I'm not aware of any documents
12 or references to people intentionally spilling
13 contaminants to the ground during Northrop's operational
14 period.

15 BY MR. SMITH

16 Q. Was there anything about Northrop's equipment
17 at Y-12 which was not in compliance with any applicable
18 permits, as far as you know?

10:24 AM

19 MR. MILLER: Objection. Lacks foundation. It
20 assumes that the witness has a basis for answering.

21 THE WITNESS: I don't have sufficient
22 information to answer that question.

23 BY MR. SMITH

24 Q. Does the District have any information that
25 any of Northrop's business operations at Y-12 were not

10:24 AM

1 conducted in accordance with the permits issued by state
2 and local authorities, such as the water -- the Regional
3 Water Board or the Air Quality Board?

4 MR. MILLER: Objection. It's compound. It
5 assumes facts not in evidence, that such permits were
6 issued. And it's not covered by the deposition notice,
7 so I assume you're just asking him to tell you what he
8 knows, but he wasn't asked to prepare the answer to that
9 question.

10 THE WITNESS: I don't have information to
11 answer that question.

12 BY MR. SMITH

13 Q. You're not graded down if you don't have
14 information. Okay. As I said earlier before we went on
15 the record, this is just a search for the truth of what
16 you know.

10:25 AM

17 Do you have any knowledge that personnel from
18 Northrop Grumman at Y-12 ever stored any chemicals in
19 violation of any required permits?

20 MR. MILLER: Same objections. Exceeds
21 deposition scope.

22 Answer if you can.

23 THE WITNESS: I didn't review documents to
24 address that question.

25 BY MR. SMITH

1 Q. Are you familiar with the degreaser that was
2 used at Y-12?

3 A. I'm aware that there was something called a
4 vapor degreaser on the site.

5 Q. Did you ever see it?

10:26 AM

6 A. No.

7 Q. Do you have any knowledge or information that
8 there was anything about the vapor degreaser that in any
9 way was contrary to any governmental regulation?

10:26 AM

10 MR. MILLER: Again, it exceeds scope.

11 Go ahead and answer.

12 THE WITNESS: All I can say to that is that I
13 believe that I've seen documents that indicate that the
14 vapor degreaser is one of the possible sources of
15 contamination.

16 BY MR. SMITH

17 Q. Was there anything about the use of the
18 degreaser that in any way violated any permit or
19 regulation, either local or state?

10:26 AM

20 MR. MILLER: Exceeds --

21 BY MR. SMITH

22 Q. As far as you know.

10:27 AM

23 MR. MILLER: Exceeds the scope of the
24 deposition notice. So, again, you have not asked the
25 witness to review the District's documents to determine

1 if the question can be answered. I'm going to let him
2 answer based on what he knows, but the record should be
3 clear, the District isn't bound by this answer which
4 exceeds the scope of the deposition notice.

5 Go ahead.

6 THE WITNESS: I didn't review documents to
7 evaluate whether violations or improper operation of the
8 degreaser occurred.

9 BY MR. SMITH

10 Q. Do you know if any violations occurred or if
11 there was any improper operation of the vapor degreaser?

10:27 AM

12 MR. MILLER: Same objections.

13 THE WITNESS: I don't feel I can answer that
14 question because I didn't review documents potentially
15 that would address that.

16 BY MR. SMITH

17 Q. Does the District have any such documents?

10:27 AM

18 MR. MILLER: Same objections.

19 THE WITNESS: I didn't seek documents to that
20 effect, so I'm not sure if the District has any or not.

21 BY MR. SMITH

22 Q. Who, if anyone, at the District would be
23 better qualified to answer that question?

10:28 AM

24 MR. MILLER: Objection. Assumes that the
25 witness is unqualified. It wasn't covered by the

1 notice, Counsel, so what you're basically asking is for
2 the witness to try to determine, without doing research,
3 what documents exist. That calls for speculation. And,
4 therefore, what person would be in the best position to
5 discuss their contents, which calls for speculation.

6 Go ahead and answer if you can.

7 THE WITNESS: I don't know at this time who
8 would be best qualified to answer that question.

9 BY MR. SMITH

10 Q. Does the District have any information that 10:28 AM
11 the vapor degreaser -- strike that.

12 Do you have any information as to whether any
13 of the plumbing or tubing that contained any VOCs at
14 Y-12 was improperly maintained?

15 A. I'll go back to say that my understanding is
16 that the degreaser is a potential source identified of
17 the release of contaminants to the subsurface.

18 Q. Is it a potential source because of any 10:29 AM
19 failure to maintain plumbing, tubing?

20 A. If its intended operation was to contain
21 contaminants, it did not meet that purpose, according to
22 the documents I've seen, indicating that it is a
23 potential source of contaminants to the subsurface.

24 Q. Was there a secondary containment system 10:30 AM
25 associated with the vapor degreaser, if you know?

11:51 AM

1 Q. At any point in time has the District done any
2 analysis of the location of the VOCs in the vadose zone
3 at Y-12 for the purpose of determining migration rates
4 towards the groundwater?

5 A. I don't recall doing -- or being aware of an
6 analysis the District has done on rates of migration
7 through the vadose zone.

8 Q. Is that within the qualifications and
9 competence of your department to be able to do that?

11:52 AM

10 MR. MILLER: You're saying if they had the
11 information and need to do the analysis, could they do
12 it? Or are you asking did they have the information?

13 BY MR. SMITH

14 Q. Did you have the ability to do it if you had
15 the information?

11:52 AM

16 A. I believe we have the qualifications, if
17 necessary, to do that analysis if the sufficient data
18 were available.

19 Q. And have you ever attempted to do that at any
20 time with regard to Y-12?

11:52 AM

21 A. I don't recall -- no, I don't believe we have
22 done a rate of migration analysis through the vadose
23 zone at the Y-12 facility.

24 Q. Have you attempted to take the concentrations
25 of chemicals of concern found at Y-12 and estimate the

11:52 AM

1 mass quantity of chemicals in the vadose zone?

2 A. No, I don't believe we've done that analysis.

3 Q. You've not done that for TCE, PCE or any other 11:53 AM
4 chemical; is that correct?

5 A. That's my understanding, yes.

6 Q. Do you know the concentration of TCE in the 11:53 AM
7 vadose zone at Y-12?

8 MR. MILLER: Objection. Vague as to time.

9 BY MR. SMITH

10 Q. At the present time. 11:53 AM

11 A. I believe there is a -- most recent document
12 that I am aware of, there was a soil vapor pilot test
13 work that was done, and I believe it found elevated
14 concentrations of a number of VOCs in the vadose zone.
15 And I would have to refer to that to find the specific
16 concentrations that were documented.

17 Q. So you're aware that Northrop Grumman has 11:54 AM
18 undertaken to do that work, correct, at least to some
19 extent?

20 A. "That work" being this soil vapor extraction
21 system pilot test, I believe. I think that's what it
22 was called, yes.

23 Q. And has the District ever undertaken on its 11:54 AM
24 own to do any quantification work at that site?

25 MR. MILLER: Quantification of what? Vague.

1 BY MR. SMITH

2 Q. Of TCE or any other chemical concern. 11:54 AM

3 MR. MILLER: Counsel, you're basically asking
4 about mass again?

5 MR. SMITH: Yeah.

6 MR. MILLER: Which has been answered, I
7 thought.

8 THE WITNESS: Are you referring to soil again?

9 BY MR. SMITH

10 Q. Correct. 11:54 AM

11 A. This is soil.

12 Q. We're in the vadose zone. 11:54 AM

13 A. Right. We have reviewed reports submitted to
14 Northrop or correspondence between Northrop and other
15 agencies, and that's the information that the District
16 has available. I don't recall the District conducting
17 its own on-site soil investigation.

18 Q. Are you familiar with the lithology of the 11:55 AM
19 site at Y-12?

20 A. Just in a general sense.

21 Q. Have you studied the nature of the constituent 11:55 AM
22 materials at each depth below the surface down to
23 groundwater?

24 MR. MILLER: Objection. Vague as to
25 "studied." Go ahead.

EXHIBIT 2

1 SUPERIOR COURT OF THE STATE OF CALIFORNIA

2 COUNTY OF ORANGE

3
4 ORANGE COUNTY WATER DISTRICT,)

5 Plaintiff,)

6 vs.)

No. 04CC00715

7 NORTHROP CORPORATION, et al.,)

8 Defendants.)

9
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14
15 DEPOSITION OF MANECK CHICHGAR

16 Riverside, California

17 Tuesday, December 11, 2007

18 Volume 1

19
20
21
22
23 Reported by:

24 MARIANNA DONNER

CSR No. 7504

25 JOB No. 301450

1 them with regard to the Y-12 site at the present
2 time?

3 A They're working on it, yes.

4 Q Okay. And you're taking split samples from
5 various wells at the present time?

6 A When I get the opportunity, yes.

7 Q And are you having periodic communications
8 with Northrop Grumman and its consultants about
9 additional site characterization?

10 A Yes.

11 Q Has the regional board reached a decision
12 yet about what type of remediation, if any, to
13 request for that site?

14 A We don't -- at the regional board we don't
15 direct people to do what type of remediation. The RP
16 and the consultants come up with a plan to do it and
17 submit it to us. If it is what looks feasible, then
18 we will agree to it. If it looks like it needs a
19 little tweaking, we will advise them of that fact.

20 Q And is Northrop and the regional board still
21 in that process?

22 A We're not talking about remediation at this
23 point in time.

24 Q Still site characterization?

25 A We're still doing some characterization at

1 the site.

2 Q All right.

3 Has Northrop Grumman been cooperative thus
4 far?

5 A Yes.

6 Let me go back a little bit. They have
7 submitted to us an initial idea as to what they want
8 to do. Okay. The work has come to us, but they are
9 still doing some more investigative work to kind of
10 firm that up.

11 Q And is that normal in these types of site
12 characterizations, that there is a period of time
13 that goes by where the consultants acquire more
14 information?

15 A Yes.

16 Q Is there anything unusual about Y-12 in that
17 regard?

18 A Well, nothing is unusual. I mean if the RP
19 needs more data to determine that and if we have
20 indicated to them that it's okay to do it, we will go
21 ahead and do it.

22 Q How long have you been the person on the
23 regional board responsible for this Y-12 site?

24 A Since the day I came on board.

25 Q So that's since 1999?

1 A Yes, sir.

2 Q Eight years?

3 A Yes, sir.

4 Q Has there ever been an instance where you
5 saw that Northrop Grumman was in violation of any
6 cleanup and abatement order with regard to that site?

7 MR. MILLER: Objection; calls for a legal
8 opinion, overbroad, compound.

9 THE WITNESS: No, sir.

10 BY MR. SMITH:

11 Q Had the regional board ever had to undertake
12 any enforcement proceedings against Northrop Grumman
13 with regard to that site?

14 A We have issued a cleanup abatement order on
15 the site, yes.

16 Q Correct.

17 And has Northrop Grumman been attempting to
18 comply with that at all times while you've been
19 there?

20 A Yes, sir.

21 Q And has the regional board issued any
22 communications to Northrop Grumman that it is
23 dissatisfied with Northrop Grumman's efforts to
24 comply with that order?

25 MR. MILLER: Best evidence, vague, overbroad,

EXHIBIT 3

1 SUPERIOR COURT OF THE STATE OF CALIFORNIA

2 COUNTY OF ORANGE

3
4 ORANGE COUNTY WATER DISTRICT,)

5 Plaintiff,)

6 vs.)

No. 04CC00715

7 NORTHROP CORPORATION, et al.,)

8 Defendants.)

9
10 AND OTHER RELATED ACTIONS.)

11
12
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15 DEPOSITION OF ROBERT HOLUB

16 Riverside, California

17 Friday, June 20, 2008

18 Volume 4

19
20
21
22
23 Reported by:

24 MARIANNA DONNER

CSR No. 7504

25 JOB No. 301882

1 OCWD is asking for Northrop Grumman itself to do
2 remediation?

3 A Not in this paragraph, no.

4 Q In the last sentence, Mr. Herndon says, "At
5 such time as appropriate, OCWD will be discussing
6 with NGC mutual strategies and compensation to
7 address the situation, but we respectfully request
8 that the RWQCB continue to enforce investigation and
9 remediation laws applicable to the subject site."

10 Indeed the Board continued to do that, did
11 it not?

12 A Yes.

13 Q And it continued to ask Northrop Grumman to
14 investigate and characterize the site, correct?

15 A Yes.

16 Q And you understood that there was also a
17 line of communication between Northrop Grumman and
18 OCWD about Northrop Grumman contributing to a
19 regional cleanup plan?

20 A Yes.

21 Q Were you involved in some of those meetings
22 and telephone conferences between --

23 A No.

24 Q -- the two?

25 A No.

1 Q Okay. Did you understand that part of the
2 impetus for those discussions is that it didn't make
3 any sense for Northrop Grumman both to do its own
4 groundwater remediation well and also have Orange
5 County Water District do one in a similar location?

6 MR. MILLER: Objection; vague, calls for
7 speculation, lacks foundation.

8 THE WITNESS: Northrop on numerous occasions
9 expressed that position to us.

10 BY MR. SMITH:

11 Q Did that seem reasonable to you?

12 A Yes.

13 Q Did you receive Exhibit 70, which is an
14 August 21, 2003 letter which I'll hand the copy to
15 you.

16 MR. MILLER: Is this 70?

17 MR. SMITH: This is 70.

18 (Defendants' Exhibit 70 was
19 marked for identification and is
20 attached hereto.)

21 THE WITNESS: I don't have a specific
22 recollection of this letter.

23 BY MR. SMITH:

24 Q Good. You anticipated my question.

25 You don't have any reason to believe you

1 didn't get it?

2 A No.

3 Q You notice the letter was carbon copied to
4 Virginia Grebbien and Craig Miller. Did you have an
5 understanding of what their positions were?

6 A Yes.

7 Q What were they?

8 A Virginia was the general manager of the
9 Orange County Water District, and I believe Craig
10 Miller was their attorney.

11 Q And you see on Page 2, first full paragraph,
12 where it says in the middle of that paragraph, "...we
13 have conceptually located a potential extraction well
14 westerly (downgradient)" --

15 A I'm sorry. Where are you at?

16 Q In the middle of the first full paragraph
17 where it says, "...we have conceptually located."

18 A Oh, yes.

19 Q "...we have conceptually located a potential
20 extraction well westerly (downgradient) of NGC's
21 former Y-12 Facility."

22 So you understood that as of 2003, OCWD was
23 still contemplating an extraction well downgradient
24 of the Y-12 facility?

25 MR. MILLER: Lacks foundation, calls for

1 A Yes.

2 Q And then Item Number 3 is to submit -- let
3 me quote from 3. "Submit and implement any
4 additional work plans that the Executive Officer
5 deems necessary to sufficiently characterize the
6 nature and extent of VOCs in groundwater that have
7 resulted from discharges at Northrop's Y-12
8 Facility."

9 Is that again additional work with regard to
10 investigation?

11 A Yes.

12 Q Was that order complied with?

13 A I believe so. I don't recall us taking a
14 position that it was not.

15 Q Do you recall a letter from Mr. Thibeault in
16 2004 to Northrop Grumman agreeing that Northrop
17 Grumman has adequately characterized the VOCs at the
18 Y-12 site?

19 MR. MILLER: Objection; vague as to time.

20 THE WITNESS: I don't remember.

21 BY MR. SMITH:

22 Q Could have happened but you just don't
23 remember?

24 A Yeah, I don't remember.

25 Q Okay. I'll represent to you there is such a

1 letter, I just forgot to bring it today because it
2 didn't have your name on it.

3 Number 4, in Exhibit 58, the CAO,
4 Paragraph 4 says, "By February 9, 2004: Submit a
5 conceptual feasibility study of alternative
6 groundwater remediation scenarios," and then it goes
7 on.

8 Was that order complied with?

9 A I don't recall.

10 Q Was a groundwater remediation plan submitted
11 by Northrop Grumman in 2004?

12 A I don't recall.

13 Q Would you agree as a general matter that a
14 17-month delay between submission of a remediation
15 plan and a response by the Board would be a long
16 delay?

17 A Unless there were some extenuating
18 circumstances involved, yes.

19 Q Are you aware of any 17-month delay between
20 the submission of Northrop Grumman's first
21 remediation work plan and a response from the Board?

22 A I have a vague recollection that there was a
23 more-than-normal delay on our part. I don't recall
24 how long it was or why that was the case.

25 Q The staff here was busy, was it not, between

1 2004 and the present on a variety of other projects,
2 true?

3 A Yes, we're always busy.

4 Q That was not meant to be that hard, okay?

5 Have you had to pull staff from time to time
6 from some projects in order to address the needs of
7 the Board on other projects?

8 A Yes.

9 Q And, for example, the Rialto project has
10 taken a lot of time of the Board from before 2004 to
11 the present, correct?

12 A With certain staff, yes.

13 Q Is it your understanding that the press of
14 business on these other projects in some part is an
15 explanation for delay in responding to Northrop
16 Grumman's work plans or remediation?

17 A I don't recall if that was a specific factor
18 in Northrop's response, but in general overall there
19 have been delays and are responding to different
20 projects because of the perchlorate issue.

21 Q Does a business undertake any risk in going
22 forward with remediation without board staff
23 approval --

24 MR. MILLER: Objection; vague, calls for
25 speculation.

1 BY MR. SMITH:

2 Q -- of a work plan?

3 A Yes, risks in terms of the possibility that
4 board staff may have requested that different actions
5 be taken other than what the party may have taken.

6 Q That would be a risk of having to do it over
7 in part or entirely, correct?

8 A Yes.

9 Q Now, in this particular case, let's look at
10 the wording of the order Mr. Thibeault signed,
11 Number 6, and we should read that in conjunction with
12 Number 7. The order is to "Implement the groundwater
13 remediation plan noted in 5 above, as approved by the
14 Executive Officer."

15 And 7 says, "Submit and implement any
16 additional remedial action plans that the Executive
17 Officer deems necessary," and then it goes on.

18 Was Northrop Grumman ordered to do
19 groundwater remediation as approved by the executive
20 officer?

21 A Yes.

22 Q Has the executive officer approved any
23 groundwater remediation plans submitted by Northrop
24 Grumman?

25 A I don't remember.

1 Q You talked earlier about there are occasions
2 when you have seen interim remedial measures
3 conducted at sites?

4 A Yes.

5 Q And I believe you said that's sometimes done
6 on a voluntary basis when you've located a particular
7 hot spot?

8 A Correct.

9 Q What do you mean by "hot spot"?

10 A A particular location where the
11 concentrations or mass of contaminants are high
12 enough where it would be feasible and overall
13 productive to go in and get that out of there quickly
14 before it has a chance to migrate further
15 downgradient.

16 Q Can you tell me when any specific hot spot
17 was actually located on the Y-12 site?

18 A I recall that the area around, I believe it
19 was MW-2 on the west side of the facility, we
20 consider to be a hot spot in terms of some occasional
21 high concentration of VOCs, and we thought that --
22 well, that's the area I recall as being a hot spot.

23 Q That was on the western border of the
24 property?

25 A Yeah, I believe the western border of the

EXHIBIT 4

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Michael D. Axline, #229840
A. Curtis Sawyer, Jr., #101324
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(Exempt from filing fees
per Govt. Code, § 6103)

Attorneys for Plaintiff
Orange County Water District

SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ORANGE

ORANGE COUNTY WATER DISTRICT,

Plaintiff,

v.

NORTHROP CORPORATION; NORTHROP
GRUMMAN CORPORATION; AMERICAN
ELECTRONICS, INC.; MAG AEROSPACE
INDUSTRIES, INC.; GULTON
INDUSTRIES, INC.; MARK IV
INDUSTRIES, INC.; EDO CORPORATION;
AEROJET-GENERAL CORPORATION;
MOORE BUSINESS FORMS, INC.; AC
PRODUCTS, INC.; FULLERTON
MANUFACTURING COMPANY;
FULLERTON BUSINESS PARK LLC; and
DOES 1 through 400, inclusive,

Defendants.

CASE NO. 04CC00715

**FIRST AMENDED
COMPLAINT FOR DAMAGES
AND OTHER RELIEF
(VOC CONTAMINATION):
(1) ORANGE COUNTY WATER
DISTRICT ACT;
(2) CALIFORNIA SUPERFUND ACT;
(3) NEGLIGENCE;
(4) NUISANCE;
(5) TRESPASS; AND
(6) DECLARATORY RELIEF**

Plaintiff Orange County Water District (the District) alleges:

SUMMARY

1. By this action the District seeks to protect the groundwater resources of Northern Orange County from toxic pollution. The California State Legislature has charged the District with preventing pollution and contamination of the groundwater basin and water supply within the District. The groundwater resources managed and replenished by the District supply over

1 fifty percent of the water needs to more than two million residents in the cities of Anaheim,
2 Buena Park, Cypress, Costa Mesa, Fountain Valley, Fullerton, Garden Grove, Huntington Beach,
3 Irvine, La Palma, Los Alamitos, Newport Beach, Orange, Placentia, Santa Ana, Seal Beach,
4 Stanton, Tustin, Villa Park, Westminster, and Yorba Linda. The District possesses rights to draw
5 water from, and valuable rights to, inter alia, recharge and store water in, one or more
6 contaminated local aquifers, including but not necessarily limited to, aquifers within the
7 groundwater basin. The District's interest in the extraction of groundwater resources of the
8 contaminated aquifer(s), and its valuable interests in recharge and storage capacity in the
9 contaminated aquifers, inter alia, is/are natural resource(s) and/or protectable interests in a
10 natural resource.

11 2. The District files this lawsuit to recover compensatory and all other damages,
12 including all necessary funds to investigate, monitor, remediate, abate, or contain contamination
13 of groundwater within the District from volatile organic chemicals (VOCs); to protect the quality
14 of the public water resources of the District; to prevent pollution or contamination of water
15 supplies; and to assure that the responsible parties -- and not the District or the public -- bear the
16 expense of remediating the contamination caused by defendants' activities.

17 3. The properties and groundwater resources that are the subject of this action are located
18 in the cities of Anaheim, Fullerton, and other locations within the District's service area; the
19 releases of VOC's and hazardous substances into the environment and related wrongful acts
20 alleged herein took place at said properties, injuring and affecting said groundwater resources.
21 Venue is therefore proper in this Court.

22 **PLAINTIFF**

23 4. The District was created by the Legislature in 1933 to maintain, protect, replenish, and
24 manage groundwater resources. The Legislature expressly granted the District the right, and
25 duty, among other things, to conduct any investigations of the quality of the groundwater within
26 the District to determine whether those waters are contaminated or polluted, and to perform any
27 necessary investigation, cleanup, abatement, or remedial work to prevent, abate, or contain any
28 threatened or existing contamination or pollution of the surface or groundwater of the District,

1 and recover the costs of any such activities from the persons responsible for the contamination or
2 threatened contamination. (Cal. Water Code, Appendix 40-8.) The District has suffered injury in
3 fact, including expending funds necessary to investigate, clean up, abate, and/or remediate the
4 contamination caused by defendants within the past three years.

5 5. The Legislature has also expressly granted the District the right, and duty, among other
6 things, to litigate in order to protect groundwater resources and to represent the rights of water
7 users within its territory. In particular, the District has the right, and duty, to commence,
8 maintain, intervene in and compromise any and all actions and proceedings to prevent: (a)
9 interference with water or water rights used or useful to lands within the District; (b) diminution
10 of the quantity or pollution or contamination of the water supply of the district, or to prevent any
11 interference with the water or water rights used or useful in the district which may endanger or
12 damage the inhabitants, lands or use of water in the district. (Cal. Water Code, Appendix 40-2.)
13 The District owns land overlying groundwater at various locations within the District and has
14 water rights therein. Water users within the District pump over 300,000 acre-feet of groundwater
15 each year. The District and the water users it represents have suffered injury in fact as a result of
16 contamination and threat of contamination in water supply wells in the District's groundwater
17 resources, as set forth in this complaint.

18 6. The District has protectable legal interests in the groundwater within the District's
19 territory, including the right to extract groundwater, replenish the aquifer, and to treat waste
20 water. These interests have been injured as a result of contamination from defendants' facilities.
21 The relief sought in this action will remedy the injury suffered by the District.

22 **DEFENDANTS AND SITE HISTORY**

23 7. When reference in this complaint is made to any act or omission of the defendants, it
24 shall be deemed to mean that the officers, directors, agents, employees, or representatives of the
25 defendants committed or authorized such act or omission, or failed to adequately supervise or
26 properly control or direct their employees while engaged in the management, direction, operation
27 or control of the affairs of defendants, and did so while acting within the scope of their
28 employment or agency.

1 8. Defendant Northrop Corporation (hereinafter "Northrop") is a Delaware corporation
2 with its principle place of business in Hawthorne, California. Northrop acquired a site located at
3 500 East Orangethorpe Avenue, Anaheim, California, in approximately 1951. On various dates
4 since 1951, Northrop, and DOES 1 through 10, inclusive, as owners and operators of the site,
5 discharged, dumped, and disposed hazardous wastes associated with its vapor degreasing and
6 anodizing process tanks, including, but not limited to: TCE; PCE; 1, 1, 1-TCA; 1, 1-DCA; 1, 2-
7 DCA; and 1, 1, 2-TCA. During the same period, Northrop also operated a "disposal pit" for
8 hazardous waste on the site.

9 9. Defendant Northrop Grumman Corporation (hereinafter "Northrop Grumman") is a
10 Delaware corporation with its principle place of business in El Segundo, California. Northrop
11 Grumman's predecessor-in-interest, Northrop, leased and operated a site known as the Northrop
12 Y-12 facility at 301 East Orangethorpe Avenue, Anaheim, California, from 1962 until 1992.
13 Northrop Grumman purchased the site in 1992. On various dates since 1951, Northrop, Northrop
14 Grumman, and DOES 11 through 20, inclusive, as owners and operators of the site, discharged,
15 dumped, and disposed hazardous wastes associated with its vapor degreasing operations,
16 including, but not limited to: TCE; PCE; 1, 1-DCE; and 1, 1, 1-TCA.

17 10. Defendant American Electronics, Inc. (hereinafter "AEI") is a California corporation
18 with its principle place of business in Fullerton, California. AEI owned and operated a site
19 located at 1600 East Valencia Drive, Fullerton, California, commencing in approximately 1967.
20 AEI and DOES 21 through 30, inclusive, as owners and operators of the site, used solvents in
21 degreasing operations and maintained a chemical storage area which caused releases of
22 hazardous waste on the site, including PCE, TCE, and 1,1, 1-TCA.

23 11. Defendant MAG Aerospace Industries, Inc. (hereinafter "MAG") is a Delaware
24 corporation with its principle place of business in Compton, California. MAG owned and
25 operated a site located at 1300 East Valencia Drive, Fullerton, California. MAG and DOES 31
26 through 40, inclusive, as owners and operators of the site, operated a PCE degreaser, a dip tank,
27 and a chemical storage area which released hazardous wastes on the site, including PCE, TCE, 1,
28 1, 1-TCA, 1, 1-DCE, and cis-1, 2-DCE.

1 12. Defendant Gulton Industries, Inc. (hereinafter "Gulton") is a Delaware corporation
2 with its principle place of business in Fullerton, California. From approximately 1960 to 1982,
3 Gulton manufactured transducers at 300 South College Boulevard, Fullerton, California, and an
4 adjacent lot known as 2424 East Fender Avenue. In 1982, Gulton subdivided the property and
5 leased a portion of the premises to defendant EDO Corporation. Plaintiff is informed that EDO
6 Western Corporation (DOE 43) also leased this property. Plaintiff is informed that in 1986,
7 Mark IV Industries, Inc., acquired Gulton and owned and operated a business at 300 South
8 College Boulevard. In 1990, Gulton reacquired the site at 300 South College Boulevard and
9 agreed to assume any liability associated with the cleanup of the property. Gulton Industries, Inc.
10 changed its name to Gulton, Inc. (DOE 41) and was later acquired by and merged into defendant
11 Telex Communications Holdings, Inc. (DOE 44) (hereinafter "Telex"). Telex is a Delaware
12 corporation with its principle place of business in Burnsville, Minnesota and doing business in
13 California. Gulton and DOES 41 through 50, inclusive, as owners and operators of the site, used
14 TCE and PCE in manufacturing operations and stored solvent drums on the site which released
15 hazardous waste at the site.

16 13. Defendant CBS Broadcasting, Inc., successor in interest to CBS, Inc. and formerly
17 known as Colombia Broadcasting Systems, Incorporated, which, at all times relevant herein, did
18 business as Fender Musical Instruments (DOE 45) (hereinafter "Fender") occupied the facility
19 located at 2424 East Fender Avenue. Fender released hazardous wastes, including PCE, at the
20 site.

21 14. Defendant Mark IV Industries, Inc. (hereinafter "Mark IV") is a Delaware
22 corporation with its principle place of business in Amherst, New York, and doing business in
23 California. Mark IV owned Gulton Industries, Inc., from approximately 1986 to 1999.

24 15. Defendant EDO Corporation is a New York corporation with its principle place of
25 business in New York, New York, and doing business in California.

26 16. Defendant EDO Western Corporation (DOE 43) is a Utah corporation with its
27 principle place of business in Salt Lake City, Utah, and doing business in California.
28

1 17. Defendant AeroJet-General Corporation (hereinafter "Aerojet"), is an Ohio
2 corporation with its principle place of business in Rancho Cordova, California, and doing
3 business in California. Aerojet conducted metal processing, ordnance manufacturing, and other
4 operations at 601 South Placentia, in Fullerton, California.. Aerojet and DOES 51 through 60,
5 inclusive, as owners and operators of the site, used TCE and PCE in manufacturing operations
6 and stored solvent drums on the site which released hazardous waste at the site.

7 18. Defendant Moore Business Forms, Inc. is a Delaware corporation with its principal
8 place of business in Bannockburn, Illinois, and doing business in California. Defendant Moore
9 Business Forms, Inc. is currently known as Moore Wallace North America, Inc., DOE 61,
10 (individually and formerly known as Moore Business Forms, Inc. and DOE 42) (hereinafter
11 collectively referred to as "Moore") is a Delaware corporation with its principle place of business
12 in Bannockburn, Illinois, and doing business in California. Moore owns and operates a site at
13 800 South Raymond in Fullerton, California. From approximately 1954 to 1985, Moore used
14 VOC's at the site in the conduct of Moore's business, including but not limited to printing credit
15 card forms, manufacturing compacted paper, and manufacturing wax coated logs. Moore and
16 DOES 61 through 70, released hazardous wastes, including PCE and TCE, at the site.

17 19. Defendant AC Products, Inc. (hereinafter "AC Products") is a California corporation
18 with its principle place of business in Placentia, California. AC Products owns and operates a
19 facility located at 172 La Jolla Street in Placentia, California. AC Products activities at this
20 location include manufacturing temporary protective coatings for nonporous surfaces. AC
21 Products and DOES 71 through 80, inclusive, as owners and operators of the site, released
22 hazardous wastes, including PCE, at the site.

23 20. Defendant Fullerton Manufacturing Company (hereinafter "Fullerton
24 Manufacturing") is a California corporation with its principle place of business in Jamaica Plain,
25 Massachusetts. Fullerton Manufacturing owns and operates a facility at 311 South Highland in
26 Fullerton, California. Fullerton Manufacturing and DOES 81 through 90, inclusive, as owners
27 and operators of the site, released hazardous wastes, including TCE, at the site.

1 21. DOES 91 through 100, inclusive owned and operated a facility at 1551 E.

2 Orangethorpe Avenue, in Fullerton, California, where they released hazardous waste, including
3 PCE and TCE.

4 22. The District is ignorant of the true names and/or capacities of the defendants sued
5 herein under the fictitious names DOES 1 through 400, inclusive. The defendants named above,
6 and DOES 1 through 400 inclusive, and each of them: (1) owned and/or operated a business
7 which used volatile organic chemicals which have been released into the subsurface; (2) were
8 legally responsible for, and committed one or more of the tortious and wrongful acts alleged in
9 this complaint; and (3) in doing the tortious and wrongful acts alleged in complaint, acted in the
10 capacity of aider, abetter, joint-venturer, agent, principle, successor-in-interest, surviving
11 corporation, controller, alter ego, licensor, patent holder, and/or indemnitor of one or more of the
12 remaining named and/or DOE defendants.

13 **CHEMICALS OF CONCERN AND RELEVANT OPERATIONS**

14 23. This action concerns certain volatile organic chemicals (VOCs), which are typically
15 used as solvents, degreasers, and for other industrial purposes. As used in this complaint,
16 volatile organic chemicals and their degradation products include, trichloroethylene (TCE),
17 tetrachloroethylend (a.k.a. perchloroethylene) (PCE), 1, 1-dichloroethylene (1, 1-DCE), 1, 2-
18 dichloroethane (1, 2-DCA), 1,4 dioxane (1-4D), 1, 1, 1-trichloroethane (1, 1, 1-TCA), 1, 1, 2-
19 trichloroethane (1, 1, 2-TCA), 1,2-3 trichloropropane (TCP), 1, 1-dichloroethane (1, 1-
20 DCA), methylene chloride, trans-1, 2,-dichloroethylene (trans-1, 2-DCE) and cis-1, 2-
21 dichloroethylene (cis-1,2-DCE) (hereinafter collectively referred to as VOCs.).

22 24. PCE and TCE are toxic organic compounds which have been used as cleaning
23 solvents. In soil, PCE can be transformed into TCE, vinylchloride, and 1, 1, 1-trichloroethane
24 (TCA).

25 25. TCP is an unnecessary contaminant present in certain cleaning solvents.

26 26. The State of California has determined that each of the VOC's named in this
27 complaint is a "hazardous waste" within the definition of the California Superfund Act due to
28 toxicity and other characteristics. These VOC's, and each of them, readily dissolve in water,

1 spread through permeable and semi-permeable soils down into and through plumes in
2 groundwater, and require expensive remediation technologies to remove or reduce to below
3 governmentally-established limits.

4 27. Defendants' historical, current and ongoing releases and disposal of significant
5 quantities of hazardous substances and wastes, at various sites and facilities within the area, have
6 caused the contamination alleged in this Complaint. VOC's in the soil and groundwater, at,
7 under, and emanating from, the sites pose an imminent and substantial threat to public health,
8 natural resources and the environment.

9 28. This complaint does not allege any cause of action or claim for relief under any
10 federal statute, regulation, or law.

11 **FIRST CAUSE OF ACTION**

12 **(Orange County Water District Act – Against All Defendants)**

13 29. The District refers to paragraphs 1 through 26 above, and by this reference
14 incorporates them as though set forth in full.

15 30. The Orange County Water District Act, California Water Code Appendix 40-1 et.
16 seq., charges the District with both the responsibility and the authority to investigate the sources
17 of contamination and potential contamination within the basin and to pursue legal remedies,
18 including cost recovery, against entities causing or threatening to cause contamination. The
19 District's Board has determined that investigation and remedial work is required by the
20 magnitude of VOC contamination, as described in this Complaint, and that prompt action is
21 needed to prevent, abate, and contain threatened and existing contamination. The Board has
22 authorized the expenditures of funds to conduct such investigation and remediation, and has
23 authorized action to recover all costs and damages associated with such contamination.

24 31. Defendants, and each of them, within the past three years have caused and are
25 causing the District to conduct investigations of the quality of the groundwater within the District
26 to determine whether those waters are contaminated or polluted with toxic substances, at
27 substantial cost to the District in an amount to be proved at trial.

28 32. Defendants, and each of them, on various dates within the past three years have

1 caused, are causing, and will cause the District to perform cleanup, abatement, and/or remedial
2 work needed to prevent, abate, and/or contain threatened or existing contamination of, or
3 pollution to, the groundwater of the District, all at substantial cost to the District in an amount to
4 be proved at trial.

5 33. Defendants, and each of them, are causing and/or threatening to cause contamination
6 and pollution of the basin. As a direct and proximate result of the acts and omissions of the
7 defendants alleged in this complaint, the District must initiate a remedial program to assess,
8 evaluate, investigate, monitor, abate, clean up, correct, contain, and/or take other necessary
9 remedial action, all at significant expense, cost, loss, and damage in amounts to be proved at
10 trial. Such costs include, but are not limited to, costs incurred to monitor, assess and evaluate the
11 hazardous substances release; costs of removal and disposal of the hazardous substance; costs to
12 remedy permanently the hazardous substance release, including, but not limited to, the storage,
13 confinement, and cleanup of hazardous substances, and any other action necessary to protect
14 public health, welfare, and the environment. Plaintiff further seeks, without limitation, recovery
15 of damages for injury to, destruction of, and/or loss of its interests in the one or more
16 contaminated aquifers and its water and natural resources, recharge and storage, usage and
17 capacity, inter alia, suffered as a result of said contamination.

18 34. As a direct and proximate result of the acts and omissions of the defendants alleged
19 in this complaint, the District will incur substantially increased expenses, all to the District's
20 damage, in an amount within the jurisdiction of this court. The District has and will incur costs
21 and attorneys' fees in prosecuting this action. The District is entitled to recover all such
22 damages, together with court costs and reasonable attorneys' fees, in this action.

23 35. As a direct and proximate result of defendants' conduct, the District is entitled to
24 recover all past, present, and future response costs, together with interest from defendants, as
25 well as damages for injury, loss and damages to natural resources.

26 **SECOND CAUSE OF ACTION**

27 **(California Superfund Act – Against All Defendants)**

28 36. The District refers to paragraphs 1 through 33 above, and by this reference

1 incorporates them as though set forth in full.

2 37. Section 25323.5(a) of the California Health and Safety Code defines a person who is
3 liable under the Carpenter-Presley-Tanner Hazardous Substance Account Act ("California
4 Superfund"). Defendants, and each of them, are owners and/or operators of facilities which have
5 released and are releasing hazardous wastes as alleged herein and are "responsible parties" under
6 California Superfund and liable to the District for response costs and other damages.

7 38. The contaminants that defendants disposed of and released into the groundwater
8 supply are specifically listed and designated as "hazardous substances" within the meaning of
9 California Health and Safety Code section 25316.

10 39. As a proximate result of defendants' release and continuing discharge of hazardous
11 substances into the environment, including the groundwater supply, the District has had to incur
12 necessary response costs, including attorneys' fees and expert fees, for which defendants are
13 strictly liable pursuant to California Health and Safety Code section 25363. Plaintiff seeks
14 recovery of response costs and abatement expenses plaintiff has incurred or will incur in
15 connection with the contamination which has migrated and continues to migrate from
16 defendants' operations and facilities. Plaintiff further seeks, without limitation, recovery of
17 damages for injury to, destruction of, and/or loss of its interests in the one or more contaminated
18 aquifers, water and natural resources, recharge and storage, usage and capacity, inter alia,
19 suffered as a result of said contamination. Notice of commencement of this action is being
20 given to the Director of Toxic Substances Control pursuant to California Health and Safety Code
21 section 25363(e).

22 40. The District seeks contribution and/or indemnity for all response costs under
23 California Health and Safety Code section 25363, which provides that any person who has
24 incurred removal or remedial action costs may seek contribution or indemnity from any
25 responsible party.

26 41. The District brings this action to: (1) require defendants to investigate and clean up
27 the environmental contamination caused or contributed to by defendants, which has migrated and
28 continues to migrate from numerous industrial, commercial and waste disposal sites and facilities

1 within the District; and (2) recover the District's costs, expenses, losses and other damages
2 caused by the environmental contamination which has been released and continues to be released
3 into the environment, and which has migrated and continues to migrate, from defendants'
4 facilities and sites.

5 **THIRD CAUSE OF ACTION**

6 **(Negligence – Against All Defendants)**

7 42. The District refers to paragraphs 1 through 39 above, and by this reference
8 incorporates them as though set forth in full.

9 43. Defendants had a duty to use due care in the handling, control, disposal, release,
10 remediation and use of VOC's, and products containing VOC's, at their respective sites.

11 44. The defendants named herein so negligently, carelessly, and/or recklessly handled,
12 controlled, failed to control, disposed, released, remediated or failed to remediate, and used
13 hazardous substances, and products containing hazardous substances, that they contaminated,
14 threatened, and polluted groundwater resources within the District, resulting in the damages
15 alleged in this complaint.

16 45. Defendants, and each of them, among other things, negligently, carelessly, and/or
17 recklessly failed to: (1) prevent spills, leaks, discharges and releases of VOC's through the use of
18 appropriate technology; (2) install and maintain systems to prevent spills, leaks, discharges and
19 releases, and facilitate prompt detection and containment of any spills, leaks, discharges and
20 releases; (3) monitor and discover spills, leaks, discharges and releases as soon as possible; (4)
21 warn those who may be injured as a result of spills, leaks, discharges and releases; and (5) clean
22 up and abate spills, leaks, discharges and releases as thoroughly and quickly as reasonably
23 possible and in a manner necessary to prevent harm and injury to plaintiff and others.

24 46. Defendants undertook to retain consultants to conduct environmental investigations
25 and cleanups, thereby affirmatively undertaking the duty to detect and remediate spills, leaks,
26 discharges and releases of VOC's. Defendants, however, negligently failed to properly discharge
27 these duties.

1 47. The defendants knew, or should have known, that VOC's would spill, leak, discharge
2 and release into the soil and contaminate groundwater.

3 48. By their conduct defendants, and each of them, among other things, are:

4 (a) Causing and/or permitting the discharge of hazardous wastes (VOC's) into
5 groundwater resources, creating conditions of pollution and/or nuisance within the
6 meaning of California Water Code section 13050;

7 (b) Using groundwater in the District for waste disposal, an unreasonable and non-
8 beneficial use of groundwater resources, in violation of California Constitution
9 Article 10, Section 2; and

10 (c) Impairing the District's rights to maintain the quality of groundwater throughout
11 the District.

12 49. As a direct and proximate result of defendants' acts and omissions as alleged herein,
13 the District has incurred within the past three years, is incurring, and will continue to incur,
14 investigation, remediation and treatment costs and expenses required to restore its groundwater
15 resources, and other damages as alleged herein, in an amount to be proved at trial.

16 50. Defendants knew that it was substantially certain that their alleged acts and omissions
17 described above would threaten public health and cause extensive contamination of public
18 drinking water supplies and property damage. Defendants committed each of the above
19 described acts and omissions knowingly, willfully, and with oppression, fraud, and/or malice and
20 with conscious disregard of the health and safety of others, and of the District's rights.

21 51. This conduct is reprehensible, despicable, and was performed in conscious disregard
22 of the known risks of injury to health and property. Defendants acted with willful and conscious
23 disregard of the probable dangerous consequences of that conduct and its foreseeable impact
24 upon the District. Therefore, the District requests an award of exemplary damages in an amount
25 sufficient to punish defendants.

26 **FOURTH CAUSE OF ACTION**

27 **(Nuisance – Against All Defendants)**

28 52. The District realleges paragraphs 1 through 49 of this complaint and incorporates

1 them herein by reference.

2 53. The negligent, reckless, intentional and ultrahazardous activity of the defendants, and
3 each of them, as alleged herein, has resulted in the contamination and pollution of groundwater
4 within the District, and constitutes a nuisance. The contamination and pollution of such
5 groundwater with VOC's is a public nuisance as defined in Civil Code section 3479, Civil Code
6 section 3480, Health and Safety Code section 5410, and Water Code section 13050, and is
7 reasonably abatable and varies over time. The defendants, and each of them, caused, created,
8 and/or assisted in the creation of the nuisance alleged herein.

9 54. The defendants, their agents and employees, handled, controlled, disposed, released
10 and used VOC's, and products containing VOC's, with reckless disregard for human health, the
11 environment, and for the peace, tranquility, and economic well-being of the public, resulting in
12 the nuisance alleged herein.

13 55. The aforesaid nuisance is continuing because it is reasonably abatable and/or because
14 the groundwater contamination herein at issue continues to migrate, move, and spread onto, into
15 and across the subsurface of the District's property and wells, and through one or more
16 contaminated aquifers, and its impact has thus varied, and continues to vary, over time.
17 Defendants, and each of them, have threatened to, and will, unless restrained by this Court,
18 continue to maintain the nuisance by failing to investigate, remove, and remediate the
19 environmental contamination which has migrated and continues to migrate from defendants'
20 operations and facilities, and each and every failure to act has been, and will be, without the
21 consent, against the will, and in violation of the rights of the District. Unless defendants, and
22 each of them, are restrained by order of this Court from continuing their non-responsive course of
23 conduct and failure to abate the contamination which has migrated and continues to migrate from
24 defendants' operations and facilities, it will be necessary for the District to commence many
25 successive actions against defendants, and each of them, to secure compensation for damage
26 sustained, thus requiring a multiplicity of suits.

27 56. The District is specially and adversely affected by the nuisance.

28 57. The nuisance caused by defendants, and each of them, has substantially interfered

1 with and obstructed the District's ability to utilize water resources free from unacceptable health
2 risk, taste, odor, pollution and contamination, and to protect groundwater within its territory from
3 such harm.

4 58. The District owns, holds and/or represents property rights, water rights, and interests
5 damaged by the nuisance. The District's injury is separate and distinct from that of the public.

6 59. The District has not consented to and does not consent to this nuisance. Defendants,
7 and each of them, knew or should have known, that the District would not consent to this
8 nuisance.

9 60. As a direct and proximate result of the nuisance, the District has been damaged
10 within the past three years and is entitled to the compensatory and exemplary damages alleged
11 herein, or to such other appropriate relief as the District may elect at trial, including, but not
12 limited to, equitable relief in the form of an order requiring defendants to abate the nuisance.

13 61. For the reasons alleged in paragraphs 48 and 49, the District is entitled to an award of
14 exemplary and punitive damages against defendants.

15 **FIFTH CAUSE OF ACTION**

16 **(Trespass – Against All Defendants)**

17 62. The District realleges paragraphs 1 through 59, inclusive, of this complaint and
18 incorporates them herein by reference.

19 63. The District is the owner, actual possessor, and/or represents the interests of the
20 owners and/or actual possessors of property rights and interests in the groundwater within its
21 territory, including the right to appropriate and regulate the use of water and the right to protect
22 such groundwater from contamination and pollution. Defendants, their agents and employees,
23 knew or in the exercise of reasonable care should have known, that VOC's are extremely
24 hazardous to groundwater and public water supplies, including the property and other rights of
25 the District and the water users it represents.

26 64. The defendants so negligently, recklessly and/or intentionally spilled, leaked,
27 released, and/or discharged, and failed to properly control, handle, store, contain, and use VOC's,
28 and products containing VOC's, that they proximately caused VOC's to contaminate and trespass

1 upon the District's property and interests as follows:

- 2 (a) The defendants participated in the use, storage, and release of VOC's by owning,
3 controlling, regulating, designing, installing, operating, monitoring, inspecting and
4 testing, or by failing to do so, the uses and storage of VOC's at their respective
5 sites, and thereby proximately caused VOC's to be spilled, leaked, released and
6 discharged into groundwater;
- 7 (b) Defendants retained consultants and negligently controlled and/or directed their
8 cleanup and remediation activities (or the lack thereof), thereby causing and
9 permitting VOC's to contaminate and pollute the District's property, and
10 defendants failed to warn the appropriate entities and individuals, including the
11 District, of known risks, spills, releases and/or leaks, and/or failed to undertake
12 reasonable, appropriate or necessary action to reduce, remediate, or abate VOC
13 groundwater contamination.
- 14 (c) When defendants learned, or reasonably should have learned, that VOC's were a
15 persistent, significant and/or widespread source of groundwater contamination, or
16 threatened to become so, defendants failed to warn the appropriate entities and
17 individuals, including the District, of known risks, spills, releases and/or leaks,
18 and/or failed to undertake reasonable, appropriate or necessary action to reduce,
19 remediate, or abate VOC's and groundwater contamination.

20 65. The contamination of groundwater within the District with VOC's has varied and
21 will vary over time and requires investigation, remediation, abatement, and/or treatment. The
22 District has engaged, is engaging and will engage, in remediation, abatement, investigation,
23 and/or treatment programs and/or in securing replacement water supplies, and has thereby
24 sustained within the past three years, and still is sustaining, and will sustain, the damages alleged
25 herein.

26 66. The defendants, and each of them, caused, created, and/or assisted in the creation of
27 the trespass alleged herein.
28

1 67. For the reasons alleged in paragraphs 48 and 49, the District is entitled to an award of
2 exemplary and punitive damages against defendants.

3 **SIXTH CAUSE OF ACTION**

4 **(Declaratory Relief – Against All Defendants)**

5 68. The District realleges paragraphs 1 through 65, inclusive, and incorporates them
6 herein by reference.

7 69. Defendants knew, or should have known, that VOC's, when used in a foreseeable
8 and intended manner, were dangerous and created an unreasonable and excessive risk of harm to
9 human health and the environment.

10 70. The defendants intentionally, willfully, deliberately and/or negligently failed to
11 properly handle, control, dispose, and release VOC's, such that defendants created substantial
12 and unreasonable threats to human health and the environment, which resulted from the
13 foreseeable and intended use and storage of VOC's and products containing VOC's.

14 71. Among other things, the District must take costly remedial action to remove VOC
15 contamination and/or secure alternative water supplies which will result in substantial costs,
16 expenses and damages within the jurisdiction of this Court.

17 72. Defendants, and each of them, have failed to reimburse the District for the Districts'
18 VOC-related investigation, remediation and cleanup costs and deny any responsibility or liability
19 for these damages and expenses the District will incur in the future.

20 73. An actual controversy exists concerning who is responsible for abating actual or
21 threatened pollution or contamination of groundwater resources within the District by VOC's.

22 74. In order to resolve this controversy, the District seeks an adjudication of the
23 respective rights and obligations of the parties, and other relief to the extent necessary to provide
24 full relief to the District.

25 **PRAYER**

26 WHEREFORE, the District requests judgment against defendants, and each of them,
27 for:

- 28 1. Compensatory damages according to proof;

1 2. Exemplary damages in an amount sufficient to punish defendants and to deter
2 defendants from ever committing the same or similar acts;

3 3. An Order declaring that defendants are liable for the full cost of all remedial and other
4 actions necessary to abate and remove VOC's which are contaminating and threatening the
5 District's property, and for such orders as may be necessary to provide full relief to the District;

6 4. An Order declaring that defendants' VOC contamination constitutes a nuisance, and
7 compelling defendants to abate that nuisance;


8 5. Attorneys' fees to the full extent permitted by law;

9 6. Costs incurred in prosecuting this action, and prejudgment interest to the full extent
10 permitted by law; and

11 7. For such and other further relief as the court may deem just and proper.

12 Dated: April 8, 2005

MILLER, AXLINE & SAWYER
A Professional Corporation

14
15 
16 DUANE C. MILLER
Attorneys for Plaintiff
Orange County Water District

1 **PROOF OF SERVICE BY MAIL**

2 I, the undersigned, declare that I am, and was at the time of service of the paper(s) herein
3 referred to, over the age of 18 years and not a party to this action. My business address is 1050
4 Fulton Avenue, Suite 100, Sacramento, California, 95825, which is located in the county in
5 which this mailing occurred. I am familiar with my office's business practice for collection and
6 processing of correspondence for mailing with the United States Postal Service, and under such
7 practice the correspondence would be deposited with the United States Postal Service, postage
8 pre-paid, the same day in the ordinary course of business.

9 On April 8, 2005, I served the foregoing document(s) described as:

10 **FIRST AMENDED COMPLAINT FOR DAMAGES AND OTHER RELIEF**
11 **(VOC CONTAMINATION): (1) ORANGE COUNTY WATER DISTRICT ACT;**
12 **(2) CALIFORNIA SUPERFUND ACT; (3) NEGLIGENCE; (4) NUISANCE; (5)**
13 **TRESPASS; AND (6) DECLARATORY RELIEF**

14 on the following persons or parties by placing a true copy thereof in a sealed envelope, showing
15 the addresses set forth below, for collection and deposit in the United States Postal Service on
16 that date following ordinary business practices:

17 **SEE ATTACHED LIST**

18 I declare under penalty of perjury under the laws of the State of California and the
19 United States of America that the foregoing is true and correct.

20 Executed on April 8, 2005, at Sacramento, California.

21 
22 **CHRISTINA HISE**

SERVICE LIST

ORANGE COUNTY WATER DISTRICT V. NORTHROP CORPORATION, ET AL.
(ORANGE COUNTY SUPERIOR COURT CASE NUMBER: 04CC00715)

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EXHIBIT 5

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(Exempt from filing fees
per Govt. Code, § 6103)

Attorneys for Plaintiff
Orange County Water District

SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ORANGE

ORANGE COUNTY WATER DISTRICT,)	CASE NO. 04CC00715
Plaintiff,)	
v.)	PLAINTIFF'S RESPONSES TO
)	NORTHROP GRUMMAN
)	CORPORATION'S FIRST SET OF
)	SPECIAL INTERROGATORIES
NORTHROP CORPORATION; NORTHROP)	
GRUMMAN CORPORATION; AMERICAN)	
ELECTRONICS, INC.; MAG AEROSPACE)	
INDUSTRIES, INC.; GULTON)	
INDUSTRIES, INC.; MARK IV)	
INDUSTRIES, INC.; EDO CORPORATION;)	
AEROJET-GENERAL CORPORATION;)	
MOORE BUSINESS FORMS, INC.; AC)	
PRODUCTS, INC.; FULLERTON)	
MANUFACTURING COMPANY;)	
FULLERTON BUSINESS PARK LLC; and)	
DOES 1 through 400, inclusive,)	
Defendants.)	

PROPOUNDING PARTY: Northrop Grumman Corporation

RESPONDING PARTY: Plaintiff, Orange County Water District

SET NUMBER: One

Page 1

3-30-05 S

1 10, 13, 19, 22, 25, 28, 31, 34, 37, 40, 43 and 46. Additional responsive information
2 demonstrating the existence of a nuisance and the migration of plumes from the release sites is
3 available in documents produced by third parties, including the Santa Ana Regional Water
4 Quality Control Board and plaintiff's consultant, Avocet, and in plaintiff's document production
5 responsive to Northrop's First Request For Production of Documents. Defendants' own
6 consultants also have provided at least portions of this information to governmental regulators.
7 No current summary exists of this information and the burden to prepare such a summary would
8 be substantially the same for defendants. Plaintiff therefore refers to these document productions
9 pursuant to California Code of Civil Procedure section 2030 (f) (2). Plaintiff's investigation and
10 discovery continue.
11

12
13 **SPECIAL INTERROGATORY NO. 110:**

14 With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts
15 supporting YOUR contention in paragraph 46 of the COMPLAINT that, "[b]y their conduct
16 defendants, and each of them,... are:
17

- 18 (a) causing and/or permitting the discharge of hazardous wastes (VOC's) into
19 groundwater resources, creating conditions of pollution and/or nuisance within the
20 meaning of California Water Code section 13050."
21

22 **RESPONSE NO. 110:**

23 Plaintiff incorporates the general objections. Plaintiff objects to this interrogatory to the
24 extent it seeks privileged or confidential information, including information encompassed by the
25 attorney-client and attorney work product privileges (including documents prepared by litigation
26 consultants). (See *Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior*
27

1 *Court* (1999) 73 Cal.App.4th 126.) Plaintiff objects to the extent this interrogatory asks for
2 information subject to the deliberative privilege. The interrogatory is vague, ambiguous and
3 compound, and has no temporal or geographic limits. The interrogatory substantively duplicates
4 other interrogatories asking for information connecting defendants to contamination in the
5 Forebay Area. Dissecting the complaint and serving redundant interrogatories is harassing and
6 overly burdensome. Asking plaintiff to identify "all persons" relating to these numerous topics is
7 also overbroad, harassing and oppressive. Plaintiff further objects to the extent the interrogatory
8 asks plaintiff to provide a detailed analysis of plume extent, sources, and migration where
9 investigation and discovery has just begun and expert witnesses have not yet been exchanged.
10

11
12 Without waiving these objections, the authors and other employees of the Regional Board
13 familiar with Cleanup and Abatement Order No. R8-2003-108 for Northrop Grumman
14 Corporation, Y-12 Facility, know that "Northrop has discharged waste into waters of the State,
15 specifically the Santa Ana Forebay Groundwater Subbasin, and is causing or permitting a
16 condition of pollution or nuisance." See also, objections and responses to Special Interrogatory
17 Nos. 2, 8, 11, 14, 20, 21, 26, 29, 32, 35, 38, 41, 44 and 47. Additional responsive information is
18 available in documents produced by third parties, including the Santa Ana Regional Water
19 Quality Control Board and plaintiff's consultant, Avocet, and in plaintiff's document production
20 responsive to Northrop's First Request For Production of Documents. No current summary
21 exists of this information and the burden to prepare such a summary would be substantially the
22 same for defendants. Plaintiff therefore refers to these document productions pursuant to
23 California Code of Civil Procedure section 2030 (f) (2). Plaintiff's investigation and discovery
24 continue.
25
26

1 **SPECIAL INTERROGATORY NO. 111:**

2 With respect to each defendant, IDENTIFY all DOCUMENTS that concern, refer or
3 relate to YOUR contention in paragraph 46 of the COMPLAINT that, "[b]y their conduct
4 defendants, and each of them,... are:

- 5
6 (a) causing and/or permitting the discharge of hazardous wastes (VOC's) into
7 groundwater resources, creating conditions of pollution and/or nuisance within the
8 meaning of California Water Code section 13050."
9

10 **RESPONSE NO. 111:**

11 Plaintiff incorporates the general objections. Plaintiff objects to this interrogatory to the
12 extent it seeks privileged or confidential information, including information encompassed by the
13 attorney-client and attorney work product privileges (including documents prepared by litigation
14 consultants). (*See Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior*
15 *Court* (1999) 73 Cal.App.4th 126.) Plaintiff objects to the extent this interrogatory asks for
16 information subject to the deliberative privilege. The interrogatory is vague, ambiguous and
17 compound, and has no temporal or geographic limits. The interrogatory substantively duplicates
18 other interrogatories asking for information connecting defendants to contamination in the
19 Forebay Area. Dissecting the complaint and serving redundant interrogatories is harassing and
20 overly burdensome. Asking plaintiff to identify "all documents" relating to these numerous
21 topics is also overbroad, harassing and oppressive. Plaintiff further objects to the extent the
22 interrogatory asks plaintiff to provide a detailed analysis of plume extent, sources, and migration
23 where investigation and discovery has just begun and expert witnesses have not yet been
24 exchanged.
25
26

1 Without waiving these objections, Cleanup and Abatement Order No. R8-2003-108 for
2 Northrop Grumman Corporation, Y-12 Facility, states that "Northrop has discharged waste into
3 waters of the State, specifically the Santa Ana Forebay Groundwater Subbasin, and is causing or
4 permitting a condition of pollution or nuisance." A report prepared for the Prout and EDO Sites
5 states that "PCE is identified as both a priority pollutant and a carcinogen." The same report
6 acknowledges that biodegradation of PCE is slow and PCE in soil has the potential to leach into
7 groundwater. Arcadis, the consultant for MAG, concluded that, based on detections of high
8 levels of VOCs on the site, "the presence of these constituents of concern will likely be
9 considered by State enforcement agencies as representing a potential threat to groundwater
10 quality beneath the site." See also, objections and responses to Special Interrogatory Nos. 1, 7,
11 10, 13, 19, 22, 25, 28, 31, 34, 37, 40, 43 and 46. Additional responsive information is available
12 in documents produced by third parties, including the Santa Ana Regional Water Quality Control
13 Board and plaintiff's consultant, Avocet, and in plaintiff's document production responsive to
14 Northrop's First Request For Production of Documents. No current summary exists of this
15 information and the burden to prepare such a summary would be substantially the same for
16 defendants. Plaintiff therefore refers to these document productions pursuant to California Code
17 of Civil Procedure section 2030 (f) (2). Plaintiff's investigation and discovery continue.
18
19
20
21

22 **SPECIAL INTERROGATORY NO. 112:**

23 With respect to each defendant, state all facts supporting YOUR contention in paragraph
24 46 of the COMPLAINT that, "[b]y their conduct defendants, and each of them, ... are ...:

- 25 (b) using groundwater in the District for waste disposal, an unreasonable and non-
26 beneficial use of groundwater resources, in violation of California Constitution
27

Article 10, Section 2."

RESPONSE NO. 112:

Plaintiff incorporates the general objections. Plaintiff further objects that the interrogatory asks plaintiff's counsel to prepare a legal analysis of theories of the case. Any such analysis is privileged or confidential information, encompassed by the attorney-client and attorney work product privileges. (See *Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior Court* (1999) 73 Cal.App.4th 126.) Without waiving these objections, see objections and response to Special Interrogatory No. 109.

SPECIAL INTERROGATORY NO. 113:

With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts supporting YOUR contention in paragraph 46 of the COMPLAINT that, "[b]y their conduct defendants, and each of them,... are ...:

- (b) using groundwater in the District for waste disposal, an unreasonable and non-beneficial use of groundwater resources, in violation of California Constitution Article 10, Section 2."

RESPONSE NO. 113:

Plaintiff incorporates the general objections. Plaintiff further objects that the interrogatory asks plaintiff's counsel to prepare a legal analysis of theories of the case. Any such analysis is privileged or confidential information, encompassed by the attorney-client and attorney work product privileges. (See *Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior Court* (1999) 73 Cal.App.4th 126.) Without waiving these objections, see objections and response to Special Interrogatory No. 110.

1 **SPECIAL INTERROGATORY NO. 114:**

2 With respect to each defendant, IDENTIFY all DOCUMENTS that concern, refer or
3 relate to YOUR contention in paragraph 46 of the COMPLAINT that, "[b]y their conduct
4 defendants, and each of them,... are ...:

- 5
6 (b) using groundwater in the District for waste disposal, an unreasonable and non-
7 beneficial use of groundwater resources, in violation of California Constitution
8 Article 10, Section 2."

9
10 **RESPONSE NO. 114:**

11 Plaintiff incorporates the general objections. Plaintiff further objects that the
12 interrogatory asks plaintiff's counsel to prepare a legal analysis of theories of the case. Any such
13 analysis is privileged or confidential information, encompassed by the attorney-client and
14 attorney work product privileges. (See *Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and
15 *Dowden v. Superior Court* (1999) 73 Cal.App.4th 126.) Without waiving these objections, see
16 objections and response to Special Interrogatory No. 109.

17
18 **SPECIAL INTERROGATORY NO. 115:**

19 With respect to each defendant, state all facts supporting YOUR contention in paragraph
20 46 of the COMPLAINT that, "[b]y their conduct defendants, and each of them,... are ...:

- 21
22 (c) impairing the District's rights to maintain the quality of groundwater throughout
23 the District."

24 **RESPONSE NO. 115:**

25 See objections and response to Special Interrogatory No. 109.

1 **SPECIAL INTERROGATORY NO. 116:**

2 With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts
3 supporting YOUR contention in paragraph 46 of the COMPLAINT that, "[b]y their conduct
4 defendants, and each of them,... are ...:

- 5
6 (c) impairing the District's rights to maintain the quality of groundwater throughout
7 the District."

8 **RESPONSE NO. 116:**

9 See objections and response to Special Interrogatory No. 110.
10

11 **SPECIAL INTERROGATORY NO. 117:**

12 With respect to each defendant, IDENTIFY all DOCUMENTS that concern, refer or
13 relate to YOUR contention in paragraph 46 of the COMPLAINT that, "[b]y their conduct
14 defendants, and each of them,... are ...:

- 15
16 (c) impairing the District's rights to maintain the quality of groundwater throughout
17 the District."

18 **RESPONSE NO. 117:**

19 See objections and response to Special Interrogatory No. 109.
20

21 **SPECIAL INTERROGATORY NO. 118:**

22 With respect to each defendant, state all facts supporting YOUR contention in paragraph
23 48 of the COMPLAINT that, "Defendants knew that it was substantially certain that their alleged
24 acts and omissions . . . would threaten public health and cause extensive contamination of public
25 drinking water supplies and property damage."
26

1 **RESPONSE NO. 118:**

2 This interrogatory is substantively identical to Special Interrogatory No. 108. See
3 objections and response to Special Interrogatory No. 108.
4

5 **SPECIAL INTERROGATORY NO. 119:**

6 With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts
7 supporting YOUR contention in paragraph 48 of the COMPLAINT that, "Defendants knew that
8 it was substantially certain that their alleged acts and omissions . . . would threaten public health
9 and cause extensive contamination of public drinking water supplies and property damage."
10

11 **RESPONSE NO. 119:**

12 This interrogatory is substantively identical to Special Interrogatory No. 109. See
13 objections and response to Special Interrogatory No. 109.

14 **SPECIAL INTERROGATORY NO. 120:**

15 With respect to each defendant, IDENTIFY all DOCUMENTS that concern, refer or
16 relate to YOUR contention in paragraph 48 of the COMPLAINT that, "Defendants knew that it
17 was substantially certain that their alleged acts and omissions . . . would threaten public health
18 and cause extensive contamination of public drinking water supplies and property damage."
19

20 **RESPONSE NO. 120:**

21 This interrogatory is substantively identical to Special Interrogatory No. 110. See
22 objections and response to Special Interrogatory No. 110.
23

24 **SPECIAL INTERROGATORY NO. 121:**

25 With respect to each defendant, state all facts supporting YOUR contention in paragraph
26 48 of the COMPLAINT that, "Defendants committed . . . acts and omissions knowingly,
27

1 willfully, and with oppression, fraud, and/or malice and with conscious disregard of the health
2 and safety of others, and the District's rights."

3 **RESPONSE NO. 121:**

4
5 Plaintiff incorporates the general objections. Plaintiff objects to this interrogatory to the
6 extent it seeks privileged or confidential information, including information encompassed by the
7 attorney-client and attorney work product privileges (including documents prepared by litigation
8 consultants). (See *Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior*
9 *Court* (1999) 73 Cal.App.4th 126.) Plaintiff further objects that the interrogatory asks plaintiff's
10 counsel to prepare a legal analysis of theories of the case. Any such analysis is privileged or
11 confidential information, encompassed by the attorney-client and attorney work product
12 privileges. Plaintiff objects to the extent this interrogatory asks for information subject to the
13 deliberative privilege. The interrogatory asks plaintiff to summarize every activity by defendants
14 relevant to this litigation. The interrogatory is vague, ambiguous and compound, and has no
15 temporal or geographic limits. Asking plaintiff to identify "every fact" relating to these
16 numerous topics is also overbroad, harassing and overly burdensome. Plaintiff further objects to
17 the extent the interrogatory asks plaintiff to provide a detailed analysis of plume extent, sources,
18 and migration where investigation and discovery has just begun and expert witnesses have not
19 yet been exchanged.
20
21
22

23 Without waiving these objections, each defendant had knowledge of spills and releases of
24 harmful contaminants on their sites and failed to properly remediate the contamination to avoid
25 injury to others, including the District. See Responses to Special Interrogatory Nos. 7, 10, 13, 19,
26 22, 25, 28, 31, 34, 37, 40, 43 and 46 for specific examples of defendants' knowledge of the
27

1 harmful characteristics of VOC's and failure to properly remediate the releases from their
2 respective sites. For example, a letter written by Robert Holub of the Regional Board to Maneck
3 Chichgar of Northrop Grumman states "We are concerned with Northrop Grumman's persistent
4 effort to ascribe the groundwater pollution from the site to a regional problem. It has already
5 been demonstrated that chlorinated volatile organic compounds discharged from the former
6 Northrop facility have adversely impacted groundwater. . . Northrop Grumman is responsible
7 for investigating and remediating any groundwater impacts that originated from discharges at this
8 site." The letter goes on to lambast Northrop for failing to investigate and remediate in a timely
9 manner: "We are also concerned with the slow pace that Northrop Grumman has been
10 conducting this investigation. . . Northrop Grumman's continued failure to conduct necessary
11 investigations at this site in a timely manner, or to implement any groundwater remediation that
12 may be necessary, could result in the issuance of a Cleanup and Abatement Order." In 2003, the
13 Santa Ana Regional Board issued a Cleanup and Abatement Order requiring Northrop to address,
14 among other things, VOC contamination emanating from its site. A report prepared for the Prout
15 and EDO Sites states that "PCE is identified as both a priority pollutant and a carcinogen." The
16 same report acknowledges that biodegradation of PCE is slow and PCE in soil has the potential
17 to leach into groundwater. A letter from AC Products to Cal-EPA, USEPA, CAL-OSHA,
18 USDT, OCHCA, and other governmental agencies acknowledges "As a result of an internal
19 environmental compliance audit which is nearly complete, several potential and actual violations
20 of environmental laws have been identified at AC Products." Additional responsive information
21 is available in documents produced by third parties, including the Santa Ana Regional Water
22 Quality Control Board and plaintiff's consultant, Avocet, and in plaintiff's document production
23
24
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1 responsive to Northrop's First Request For Production of Documents. No current summary
2 exists of this information and the burden to prepare such a summary would be substantially the
3 same for defendants. Plaintiff therefore refers to these document productions pursuant to
4 California Code of Civil Procedure section 2030 (f) (2). Plaintiff's investigation and discovery
5 continue.
6

7 **SPECIAL INTERROGATORY NO. 122:**

8 With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts
9 supporting YOUR contention in paragraph 48 of the COMPLAINT that, "Defendants committed
10 ... acts and omissions knowingly, willfully, and with oppression, fraud, and/or malice and with
11 conscious disregard of the health and safety of others, and the District's rights."
12

13 **RESPONSE NO. 122:**

14 Plaintiff incorporates the general objections. Plaintiff objects to this interrogatory to the
15 extent it seeks privileged or confidential information, including information encompassed by the
16 attorney-client and attorney work product privileges, including documents prepared by litigation
17 consultants. (See *Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior Court*
18 (1999) 73 Cal.App.4th 126.) Plaintiff further objects that the interrogatory asks plaintiff's
19 counsel to prepare a legal analysis of theories of the case. Any such analysis is privileged or
20 confidential information, encompassed by the attorney-client and attorney work product
21 privileges. Plaintiff objects to the extent this interrogatory asks for information subject to the
22 deliberative privilege. The interrogatory asks plaintiff to summarize every activity by defendants
23 relevant to this litigation. The interrogatory is vague, ambiguous and compound, and has no
24 temporal or geographic limits. Asking plaintiff to identify "all persons" with any knowledge
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1 relating to these numerous topics is also overbroad, harassing and overly burdensome. Plaintiff
2 further objects to the extent the interrogatory asks plaintiff to provide a detailed analysis of
3 plume extent, sources, and migration where investigation and discovery has just begun and
4 expert witnesses have not yet been exchanged.

5
6 Without waiving these objections, *see* objections and responses to Special Interrogatory
7 Nos. 2, 8, 11, 14, 20, 23, 26, 29, 33, 35, 38, 41, 44 and 47. Additional responsive information is
8 available in documents produced by third parties, including the Santa Ana Regional Water
9 Quality Control Board and plaintiff's consultant, Avocet, and in plaintiff's document production
10 responsive to Northrop's First Request For Production of Documents. No current summary
11 exists of this information and the burden to prepare such a summary would be substantially the
12 same for defendants. Plaintiff therefore refers to these document productions pursuant to
13 California Code of Civil Procedure section 2030 (f) (2). Plaintiff's investigation and discovery
14 continue.
15

16
17 **SPECIAL INTERROGATORY NO. 123:**

18 With respect to each defendant, IDENTIFY all DOCUMENTS that concern, refer or
19 relate to YOUR contention in paragraph 48 of the COMPLAINT that, "Defendants committed . .
20 acts and omissions knowingly, willfully, and with oppression, fraud, and/or malice and with
21 conscious disregard of the health and safety of others, and the District's rights."
22

23 **RESPONSE NO. 123:**

24 See objections and response to Special Interrogatory No. 121.

25 **SPECIAL INTERROGATORY NO. 124:**

26 With respect to each defendant, state all facts supporting YOUR contention in paragraph
27

1 49 of the COMPLAINT that defendants' "conduct is reprehensible, despicable, and was
2 performed in conscious disregard of the known risks to health and property."

3 **RESPONSE NO. 124:**
4

5 This interrogatory is substantively identical to Special Interrogatory No. 121. *See*
6 objections and response to Special Interrogatory No. 121.

7 **SPECIAL INTERROGATORY NO. 125:**
8

9 With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts
10 supporting YOUR contention in paragraph 49 of the COMPLAINT that defendants' "conduct is
11 reprehensible, despicable, and was performed in conscious disregard of the known risks to health
12 and property."

13 **RESPONSE NO. 125:**
14

15 This interrogatory is substantively identical to Special Interrogatory No. 122. *See*
16 objections and response to Special Interrogatory No. 122.

17 **SPECIAL INTERROGATORY NO. 126:**
18

19 With respect to each defendant, IDENTIFY all DOCUMENTS that concern, refer or
20 relate to YOUR contention in paragraph 49 of the COMPLAINT that defendants' "conduct is
21 reprehensible, despicable, and was performed in conscious disregard of the known risks to health
22 and property."

23 **RESPONSE NO. 126:**
24

25 This interrogatory is substantively identical to Special Interrogatory No. 123. *See*
26 objections and response to Special Interrogatory No. 123.

1 **SPECIAL INTERROGATORY NO. 127:**

2 With respect to each defendant, state all facts supporting YOUR contention in paragraph
3 49 of the COMPLAINT that, "Defendants acted with willful and conscious disregard of the
4 probable dangerous consequences of that conduct and its foreseeable impact upon the District."
5

6 **RESPONSE NO. 127:**

7 This interrogatory is substantively identical to Special Interrogatory No. 121. See
8 objections and response to Special Interrogatory No. 121.
9

10 **SPECIAL INTERROGATORY NO. 128:**

11 With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts
12 supporting YOUR contention in paragraph 49 of the COMPLAINT that "Defendants acted with
13 willful and conscious disregard of the probable dangerous consequences of that conduct and its
14 foreseeable impact upon the District."
15

16 **RESPONSE NO. 128:**

17 This interrogatory is substantively identical to Special Interrogatory No. 122. See
18 objections and response to Special Interrogatory No. 122.
19

20 **SPECIAL INTERROGATORY NO. 129:**

21 With respect to each defendant, IDENTIFY all DOCUMENTS that concern, refer or
22 relate to YOUR contention in paragraph 49 of the COMPLAINT that, "Defendants acted with
23 willful and conscious disregard of the probable dangerous consequences of that conduct and its
24 foreseeable impact upon the District."
25

26 **RESPONSE NO. 129:**

27 This interrogatory is substantively identical to Special Interrogatory No. 123. See
28

1 objections and response to Special Interrogatory No. 123.

2 **SPECIAL INTERROGATORY NO. 130:**

3 With respect to each defendant, state all facts supporting YOUR contention in paragraph
4 51 of the COMPLAINT, that "[t]he negligent, reckless, intentional and ultrahazardous activity of
5 the defendants, . . . has resulted in the contamination and pollution of groundwater within the
6 District, and constitutes a nuisance."
7

8 **RESPONSE NO. 130:**

9 This interrogatory is substantively identical to Special Interrogatory No. 111. See
10 objections and response to Special Interrogatory No. 111.
11

12 **SPECIAL INTERROGATORY NO. 131:**

13 With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts
14 supporting YOUR contention in paragraph 51 of the COMPLAINT, that "[t]he negligent,
15 reckless, intentional and ultrahazardous activity of the defendants, . . . has resulted in the
16 contamination and pollution of groundwater within the District, and constitutes a nuisance."
17

18 **RESPONSE NO. 131:**

19 This interrogatory is substantively identical to Special Interrogatory No. 112. See
20 objections and response to Special Interrogatory No. 112.
21

22 **SPECIAL INTERROGATORY NO. 132:**

23 With respect to each defendant, IDENTIFY all DOCUMENTS that concern, refer or
24 relate to YOUR contention in paragraph 51 of the COMPLAINT, that "[t]he negligent, reckless,
25 intentional and ultrahazardous activity of the defendants, . . . has resulted in the contamination
26 and pollution of groundwater within the District, and constitutes a nuisance."
27

1 **RESPONSE NO. 132:**

2 This interrogatory is substantively identical to Special Interrogatory No. 113. *See*
3 objections and response to Special Interrogatory No. 113.

4 **SPECIAL INTERROGATORY NO. 133:**

5 State all facts supporting YOUR contention in paragraph 51 of the COMPLAINT that,
6
7 "[t]he contamination and pollution of such groundwater with VOC's is a public nuisance as
8 defined in Civil Code section 3480, Health and Safety Code 5410, and Water Code section
9 13050."

10 **RESPONSE NO. 133:**

11 This interrogatory is substantively identical to Special Interrogatory No. 111. *See*
12 objections and response to Special Interrogatory No. 111. In addition, to the extent the
13 interrogatory asks for a legal analysis of the above code sections, defendants' counsel are equally
14 capable of undertaking such research relating to those laws.

15 **SPECIAL INTERROGATORY NO. 134:**

16 With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts
17 supporting YOUR contention in paragraph 51 of the COMPLAINT that, "[t]he contamination
18 and pollution of such groundwater with VOC's is a public nuisance as defined in Civil Code
19 section 3480, Health and Safety Code 5410, and Water Code section 13050."

20 **RESPONSE NO. 134:**

21 This interrogatory is substantively identical to Special Interrogatory No. 112. *See*
22 objections and response to Special Interrogatory No. 112.

1 **SPECIAL INTERROGATORY NO. 135:**

2 With respect to each defendant, IDENTIFY all DOCUMENTS that concern, refer or
3 relate to YOUR contention in paragraph 51 of the COMPLAINT that, "[t]he contamination and
4 pollution of such groundwater with VOC's is a public nuisance as defined in Civil Code section
5 3480, Health and Safety Code 5410, and Water Code section 13050."
6

7 **RESPONSE NO. 135:**

8 This interrogatory is substantively identical to Special Interrogatory No. 111. See
9 objections and response to Special Interrogatory No. 111.
10

11 **SPECIAL INTERROGATORY NO. 136:**

12 With respect to each defendant, state all facts supporting YOUR contention in paragraph
13 52 of the COMPLAINT that. "[t]he defendants, their agents and employees, handled, controlled,
14 disposed, released and used VOC's, and products containing VOC's with reckless disregard for
15 human health, the environment, and for the peace, tranquility, and economic well-being of the
16 public, resulting in the nuisance alleged herein."
17

18 **RESPONSE NO. 136:**

19 This interrogatory is substantively identical to Special Interrogatory No. 130. See
20 objections and response to Special Interrogatory No. 130.
21

22 **SPECIAL INTERROGATORY NO. 137:**

23 With respect to each defendant, IDENTIFY all PERSONS with knowledge of the facts
24 supporting YOUR contention in paragraph 52 of the COMPLAINT that, "[t]he defendants, their
25 agents and employees, handled, controlled, disposed, released and used VOC's, and products
26 containing VOC's with reckless disregard for human health, the environment, and for the peace,
27

EXHIBIT 6



Sep 18 2007
4:55PM

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Michael D. Axline, #229840
A. Curtis Sawyer, Jr., #101324
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(Exempt from filing fees
per Govt. Code, § 6103)

Attorneys for Plaintiff
Orange County Water District

SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ORANGE

ORANGE COUNTY WATER DISTRICT,) CASE NO. 04CC00715

Plaintiff,)

v.)

NORTHROP CORPORATION; NORTHROP)
GRUMMAN CORPORATION; AMERICAN)
ELECTRONICS, INC.; MAG AEROSPACE)
INDUSTRIES, INC.; GULTON)
INDUSTRIES, INC.; MARK IV)
INDUSTRIES, INC.; EDO CORPORATION;)
AEROJET-GENERAL CORPORATION;)
MOORE BUSINESS FORMS, INC.; AC)
PRODUCTS, INC.; FULLERTON)
MANUFACTURING COMPANY;)
FULLERTON BUSINESS PARK LLC; and)
DOES 1 through 400, inclusive,)

Defendants.)

PROPOUNDING PARTY: Defendant NORTHROP GRUMMAN SYSTEMS CORP

RESPONDING PARTY: Plaintiff ORANGE COUNTY WATER DISTRICT

SET NUMBER: Two

1 Without waiving those objections, plaintiff hereby responds to defendant Northrop Grumman
2 Systems Corporation's ("Northrop's") Second Set of Special Interrogatories as follows:

3 **SPECIAL INTERROGATORY NO. 157:**
4

5 Do you contend that any VOC which was released by NGSC has caused any bodily injury
6 to any person due to the ingestion of drinking water contaminated with VOC?

7 **RESPONSE NO. 157:**
8

9 Plaintiff incorporates the general objections. The interrogatory is not full and complete in
10 and of itself, in violation of California Code of Civil Procedure section 2030.060 (d). The
11 interrogatory is vague, ambiguous and compound, has no temporal or geographic limits, making
12 the interrogatory overbroad, harassing and overly burdensome and contravening the District's
13 agreement with defendants upon a set of boundaries encompassing the plume. After extensive
14 meet and confer sessions, the parties reached an agreement regarding the "relevant area" for
15 purposes of discovery. Such meet and confer efforts are senseless if defendants will not abide by
16 the agreement. The District further objects that the interrogatory asks for information that is not
17 likely to lead to admissible evidence. Plaintiff further objects to the extent the interrogatory asks
18 plaintiff to provide a detailed analysis of plume extent and migration where investigation is
19 ongoing and expert witnesses have not yet been exchanged. Plaintiff further objects to the extent
20 the interrogatory asks plaintiff to summarize and provide an analysis of documents, including
21 those produced by public entities and third parties and maintained by entities other than the
22 District. The District objects to this interrogatory to the extent it seeks privileged or confidential
23 information, including information encompassed by the attorney-client and attorney work
24 product privileges (including documents prepared by litigation consultants). (*See Sporck v. Peil*
25 (*3rd Cir. 1985*) 759 F.2d 312, 315 and *Dowden v. Superior Court* (1999) 73 Cal.App.4th 126.)
26
27
28

1 The District objects to the extent this interrogatory asks for information subject to the
2 deliberative privilege.

3 Without waiving these objections, the District is unaware of any allegation that any
4 "VOC which was released by NGSC has caused any bodily injury to any person due to the
5 ingestion of drinking water contaminated with VOC." Records pertaining to complaints of
6 individuals consuming water within the District's boundaries would be maintained in the records
7 of individual cities and water purveyors, and not the District's records. The District's
8 investigation and discovery continue.

9
10
11 **SPECIAL INTERROGATORY NO. 158:**

12 Has NGSC caused drinking water to be served to any person in Orange County
13 containing a contaminant which exceeded the MCL for such contaminant?

14 **RESPONSE NO. 158:**

15 The District incorporates the general objections. The interrogatory is not full and
16 complete in and of itself, in violation of California Code of Civil Procedure section 2030.060 (d).
17 The interrogatory is vague, ambiguous and compound, has no temporal or geographic limits,
18 making the interrogatory overbroad, harassing and overly burdensome and contravening the
19 District's agreement with defendants upon a set of boundaries encompassing the plume. After
20 extensive meet and confer sessions, the parties reached an agreement regarding the "relevant
21 area" for purposes of discovery. Such meet and confer efforts are senseless if defendants will not
22 abide by the agreement. Moreover the term "contaminant" is overly broad and may encompass
23 numerous contaminants not at issue in this litigation. The interrogatory therefore asks for
24 information that is not likely to lead to admissible evidence. The phrase "Has Northrop caused
25 drinking water to be served" is also vague and ambiguous. The District does not understand
26
27
28

1 Northrop to be a purveyor of public drinking water. The District further objects to the extent the
2 interrogatory asks the District to provide a detailed analysis of plume extent and migration where
3 investigation is ongoing and expert witnesses have not yet been exchanged. The District further
4 objects to the extent the interrogatory asks the District to summarize and provide an analysis of
5 documents, including those produced by public entities and third parties and maintained by
6 entities other than the District. The District objects to this interrogatory to the extent it seeks
7 privileged or confidential information, including information encompassed by the attorney-client
8 and attorney work product privileges (including documents prepared by litigation consultants).
9 (See *Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior Court* (1999) 73
10 Cal.App.4th 126.) The District objects to the extent this interrogatory asks for information
11 subject to the deliberative privilege.
12

13
14 Without waiving these objections, the District is aware of detections of trichloroethylene
15 (TCE) above the MCL in wells downgradient from Northrop's property. (See Response to
16 Interrogatory No. 160.) The District is unaware of any city or water purveyor within the
17 boundaries of the District who has served water in excess of the MCL for any contaminant.
18 Those records, however, are maintained by individual cities and water purveyors and not within
19 the possession of the District. The District's investigation and discovery continue.
20

21 **SPECIAL INTERROGATORY NO. 159:**
22

23 If the response to the preceding interrogatory is not an unqualified negative, describe the
24 full circumstances of each such instance including the date, persons served, the identity and
25 concentration of the contaminant, and the source of your knowledge.
26

27 **RESPONSE NO. 159:**
28

See objections and response to Interrogatory No. 158.

1 a matter for expert discovery and prematurely seeks information concerning plume extent and
2 migration where expert witnesses have not yet been exchanged. Moreover, Northrop is liable for
3 the full reasonable costs of remediating the soil and groundwater contamination associated with
4 the Northrop sites, including response costs, investigative costs, and litigation costs. The
5 District's investigation and discovery continue.

6
7 **SPECIAL INTERROGATORY NO. 163:**

8 State all facts, and describe their source, which support the response to in the preceding
9 interrogatory.

10
11 **RESPONSE NO. 163:**

12 See objections and response to Interrogatory No. 162.

13 **SPECIAL INTERROGATORY NO. 164:**

14 Under which causes of action in the operative complaint do you now seek punitive
15 damages against NGSC?

16
17 **RESPONSE NO. 164:**

18 Plaintiff incorporates the general objections. The interrogatory is vague and ambiguous,
19 implying that the District has modified its claim for punitive damages. The District objects to
20 this interrogatory to the extent it seeks privileged or confidential information, including
21 information encompassed by the attorney-client and attorney work product privileges (including
22 documents prepared by litigation consultants). (*See Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312,
23 315 and *Dowden v. Superior Court* (1999) 73 Cal.App.4th 126.) The District objects to the
24 extent this interrogatory asks for information subject to the deliberative privilege.
25

26 Without waiving these objections, the District has asked for punitive damages in
27 conjunction with the Third (Negligence), Fourth (Nuisance) and Fifth (Trespass) Causes of
28

1 Action. (See Complaint, ¶¶ 48, 49, 50, 51, 60, 61, 67 and Prayer § 2.) The District's
2 investigation and discovery continue.

3 **SPECIAL INTERROGATORY NO. 165:**
4

5 Identify and describe all conduct, including in particular the date of such conduct, by
6 NGSC which you contend constitutes evidence of fraud, oppression or malice warranting
7 punitive damages under Civil Code section 3294?

8 **RESPONSE NO. 165:**
9

10 The District incorporates the general objections. The interrogatory is compound, in
11 violation of California Code of Civil Procedure section 2030.060 (f). The District objects to the
12 extent the interrogatory asks the District to provide a detailed analysis of plume extent, sources,
13 and migration where investigation and discovery is ongoing and expert witnesses have not yet
14 been exchanged. The District objects to this interrogatory to the extent it seeks privileged or
15 confidential information, including information encompassed by the attorney-client and attorney
16 work product privileges (including documents prepared by litigation consultants). (See *Sporck v.*
17 *Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior Court* (1999) 73 Cal.App.4th
18 126.) The District objects to the extent this interrogatory asks for information subject to the
19 deliberative privilege. The interrogatory is redundant with prior discovery propounded by
20 Northrop, which sought identical information:
21
22

23 **SPECIAL INTERROGATORY NO. 121:**

24 With respect to each defendant, state all facts supporting YOUR
25 contention in paragraph 48 of the COMPLAINT that, "Defendants
26 committed . . . acts and omissions knowingly, willfully, and with
oppression, fraud, and/or malice and with conscious disregard of
the health and safety of others, and the District's rights."

27 **SPECIAL INTERROGATORY NO. 124:**

28 With respect to each defendant, state all facts supporting YOUR

1 contention in paragraph 49 of the COMPLAINT that defendants'
2 "conduct is reprehensible, despicable, and was performed in
3 conscious disregard of the known risks to health and property."

4 **SPECIAL INTERROGATORY NO. 127:**

5 With respect to each defendant, state all facts supporting YOUR
6 contention in paragraph 49 of the COMPLAINT that, "Defendants
7 acted with willful and conscious disregard of the probable
8 dangerous consequences of that conduct and its foreseeable impact
9 upon the District."

10 The District has already provided responsive information and Northrop never moved to
11 compel further responses. California Code of Civil Procedure Section 2023 makes propounding
12 duplicative discovery sanctionable:

13 Misuses of the discovery process include, but are not limited to, the
14 following:

15 (3) Employing a discovery method in a manner or to an extent that
16 causes unwarranted annoyance, embarrassment or oppression, or
17 undue burden and expense.

18 Without waiving these objections, *see* objections and response to Interrogatory No. 121,
19 which states in pertinent part:

20 Without waiving these objections, each defendant had
21 knowledge of spills and releases of harmful contaminants on their
22 sites and failed to properly remediate the contamination to avoid
23 injury to others, including the District. *See* Responses to Special
24 Interrogatory Nos. 7, 10, 13, 19, 22, 25, 28, 31, 34, 37, 40, 43 and
25 46 for specific examples of defendants' knowledge of the harmful
26 characteristics of VOC's and failure to properly remediate the
27 releases from their respective sites. For example, a letter written
28 by Robert Holub of the Regional Board to Maneck Chichgar of
Northrop Grumman states "We are concerned with Northrop
Grumman's persistent effort to ascribe the groundwater pollution
from the site to a regional problem. It has already been
demonstrated that chlorinated volatile organic compounds
discharged from the former Northrop facility have adversely
impacted groundwater. . . Northrop Grumman is responsible for
investigating and remediating any groundwater impacts that
originated from discharges at this site." The letter goes on to

1 lambast Northrop for failing to investigate and remediate in a
2 timely manner: "We are also concerned with the slow pace that
3 Northrop Grumman has been conducting this investigation. . .
4 Northrop Grumman's continued failure to conduct necessary
5 investigations at this site in a timely manner, or to implement any
6 groundwater remediation that may be necessary, could result in the
7 issuance of a Cleanup and Abatement Order." In 2003, the Santa
8 Ana Regional Board issued a Cleanup and Abatement Order
9 requiring Northrop to address, among other things, VOC
10 contamination emanating from its site.

11 The District's investigation and discovery continue.

12 **SPECIAL INTERROGATORY NO. 166:**

13
14 Identify each director, officer or managing agent of NGSC who you contend committed
15 the conduct referred to in the preceding interrogatory?

16 **RESPONSE NO. 166:**

17 The District incorporates the general objections. The District objects to this interrogatory
18 to the extent it seeks privileged or confidential information, including information encompassed
19 by the attorney-client and attorney work product privileges (including documents prepared by
20 litigation consultants). (*See Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v.*
21 *Superior Court* (1999) 73 Cal.App.4th 126.) The interrogatory is vague, ambiguous and
22 compound, in violation of California Code of Civil Procedure section 2030.060 (f), asking
23 plaintiff to identify the names of managers and directors, when Northrop has failed to identify
24 these same individuals in response to the District's interrogatories asking for persons with
25 knowledge regarding use, storage and disposal of solvents. The District further objects to the
26 extent the interrogatory asks the District to identify all witnesses who effectively have any
27 knowledge regarding plume extent, migration, and treatment options and costs, where
28 investigation and discovery has not been completed and expert witnesses have not yet been

1 exchanged. The District further objects to the extent the interrogatory asks plaintiff to
2 summarize and provide an analysis of documents, including those produced by public entities
3 and third parties. The interrogatory is redundant with prior discovery propounded by Northrop,
4 which sought identical information:
5

6 **SPECIAL INTERROGATORY NO. 122:**

7 With respect to each defendant, IDENTIFY all PERSONS
8 with knowledge of the facts supporting YOUR contention in
9 paragraph 48 of the COMPLAINT that, "Defendants committed . .
10 . acts and omissions knowingly, willfully, and with oppression,
11 fraud, and/or malice and with conscious disregard of the health and
12 safety of others, and the District's rights."

11 **SPECIAL INTERROGATORY NO. 125:**

12 With respect to each defendant, IDENTIFY all PERSONS
13 with knowledge of the facts supporting YOUR contention in
14 paragraph 49 of the COMPLAINT that defendants' "conduct is
15 reprehensible, despicable, and was performed in conscious
16 disregard of the known risks to health and property."

15 **SPECIAL INTERROGATORY NO. 128:**

16 With respect to each defendant, IDENTIFY all PERSONS
17 with knowledge of the facts supporting YOUR contention in
18 paragraph 49 of the COMPLAINT that "Defendants acted with
19 willful and conscious disregard of the probable dangerous
20 consequences of that conduct and its foreseeable impact upon the
21 District."

22 The District provided responsive information in March, 2005. Northrop did not move to
23 compel. California Code of Civil Procedure Section 2023 makes propounding duplicative
24 discovery sanctionable:
25

26 Misuses of the discovery process include, but are not limited to, the
27 following:

28 (3) Employing a discovery method in a manner or to an extent that
causes unwarranted annoyance, embarrassment or oppression, or
undue burden and expense.

Subject to and without waiving these objections, *see* objections and response to

1 Interrogatories 122, 125 and 128. In addition, the District expects that current and former
2 directors and managers of the Northrop sites as well as current and former managers of
3 environmental issues, worker health and safety and those managers and directors responsible for
4 meeting with government inspectors, will know about conditions and practices that led to the
5 contamination at Northrop's sites as well as Northrop's failure to remediate those sites. Those
6 managers and directors include, but are not limited to Tim Haltmeyer, Ken Erwin, Glenn Ozima,
7 Larry Cragun, Michael Martin, Val. A. Erebor, Alec Uzemeck, Barbara Roach, Kurt Massoudi,
8 Walter Woo, Brad Grow, David Morycz, David F. Wong, Norman L. Sealander, C. A. Bajza,
9 Steve E. Aalam, Ruben Gutierrez, C. S. Taylor, Rebecca Bixby, Jim Watson, K. Y. Woodall,
10 Mort Hofflich, O. Muller, J. Brust, T. Daly, R. Jimenez, J. Mongell, G. Serio, D. Wong,
11 Margaret Epstein, Georgetta A. Wolff, Jennifer Sasaki and Andrew Lee.
12

13
14 In June, of this year, after delaying production of documents for approximately a year,
15 Northrop finally produced documents concerning the known extent of the contamination at the
16 Northrop sites, Regional Board interaction and consultant reports. Northrop still has not
17 produced these types of documents for at least two sites: (1) Northrop has access to the
18 documents produced by third parties containing similar information, including the Santa Ana
19 Regional Water Quality Control Board and the District's consultant, Avocet, and also in the
20 District's document production. James Babcock produced his documents concerning Northrop.
21 Many of these documents contain the identity of managers, directors and others who may have
22 knowledge regarding the subject matter of this interrogatory. No non-privileged summary exists
23 of this information and the burden to prepare such a summary would be substantially the same
24 for defendants. The District therefore refers to these document productions pursuant to
25 California Code of Civil Procedure section 2030.230. The District's investigation and discovery
26
27
28

1 continue.

2 **SPECIAL INTERROGATORY NO. 167:**

3
4 Identify and describe every item of damage you seek against NGSC in this case by type,
5 amount, and date incurred.

6
7 **RESPONSE NO. 167:**

8 The District incorporates the general objections. The interrogatory is compound, in
9 violation of California Code of Civil Procedure section 2030.060 (f). The District objects to the
10 extent the interrogatory asks the District to provide a detailed analysis of plume extent, sources,
11 and migration where investigation and discovery is ongoing and expert witnesses have not yet
12 been exchanged. The District objects to this interrogatory to the extent it seeks privileged or
13 confidential information, including information encompassed by the attorney-client and attorney
14 work product privileges (including documents prepared by litigation consultants). (*See Sporck v.*
15 *Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior Court* (1999) 73 Cal.App.4th
16 126.) The District objects to the extent this interrogatory asks for information subject to the
17 deliberative privilege. The interrogatory is redundant with prior discovery propounded by
18 Raytheon, which sought identical information:
19
20
21

22 **SPECIAL INTERROGATORY NO. 9:**

23 State all facts regarding costs that OCWD has incurred or
24 expended to date to conduct investigations of the quality of
25 groundwater within the OCWD to determine whether those waters
26 are contaminated or polluted with toxic substances as alleged in
27 this action.

28 **SPECIAL INTERROGATORY NO. 10:**

State all facts regarding costs that OCWD has incurred or

1 **RESPONSE NO. 183:**

2 *See* objections and response to Interrogatory No. 182.
3

4 **SPECIAL INTERROGATORY NO. 184:**

5 What are the despicable acts (as defined in Civil Code section 3294) which you contend
6
7 any officer, director or managing agent of NGSC committed with regard to the matters alleged in
8 the operative complaint?
9

10 **RESPONSE NO. 184:**

11 This interrogatory is substantively identical to Interrogatories 165 and 166. *See*
12 objections and response to Interrogatories 165 and 166.
13

14 **SPECIAL INTERROGATORY NO. 185:**

15 With regard to the acts identified in the answer to the preceding interrogatory, state the
16 date of the act, the name of the person committing the act, the location of the act, and the names
17 of all witnesses to the act.
18

19 **RESPONSE NO. 185:**

20 This interrogatory is substantively identical to Interrogatories 165 and 166. *See*
21 objections and response to Interrogatories 165 and 166.
22

23 **SPECIAL INTERROGATORY NO. 186:**

24 Identify and describe each item of actual cost has the District incurred regarding any
25 investigations directly related to any and all NGSC sites which are the subject of the operative
26 complaint.
27
28

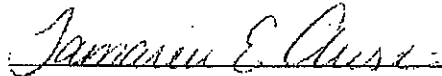
1 consultants have produced documents concerning the Y-19 site. Northrop and the District have
2 gathered Regional Water Quality Control Board documents which also describe the presence and
3 extent of contamination on and around the Northrop sites. These documents are all available to
4 Northrop in the document depository. No non-privileged summary of those records exists and
5 the burden to prepare such a summary would be substantially the same for defendants. The
6 District therefore refers to the document production pursuant to California Code of Civil
7 Procedure section 2030.230. The District's investigation and discovery continue.
8
9
10

11 Dated: September 18, 2007

MILLER, AXLINE & SAWYER

A Professional Corporation

12
13
14
15 By:



TAMARIN E. AUSTIN

Attorneys for plaintiffs
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23
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EXHIBIT 7

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on the 28th day of February 1994.

Northrop Corporation

By: &PINAZ2928

Nelson F. Gibbs
Corporate Vice President and
Controller
(Principal Accounting
Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed on behalf of the registrant this 28th day of February 1994, by the following persons and in the capacities indicated.

Signature	Title
Kent Kresa*	Chairman of the Board, President and Chief Executive Officer and Director (Principal Executive Officer)
Oliver C. Boileau, Jr. *	Director
Jack R. Borsting*	Director
John T. Chain, Jr.*	Director
Jack Edwards*	Director
Barbara C. Jordan*	Director
Aulana L. Peters*	Director
Richard R. Rosenberg*	Director
William F. Schmied*	Director
John Brooks Slaughter*	Director
Wallace C. Solberg*	Director
Richard J. Stegemeier*	Director
Richard B. Waugh, Jr.*	Corporate Vice President and Chief Financial Officer

*By: &PINAD1368

Sheila M. Gibbons, Attorney in Fact
pursuant to a power of attorney

Northrop Grumman Systems Corp · 10-K · For 12/31/93, On 2/28/94**Table in Document 1 of 6 · 10-K · 1993 10-K*****Download this table in: [Spreadsheet Format \(.csv\)](#)***

Executive Officers of the Registrant

The following individuals were the elected officers of the company as of February 16, 1994:

Name	Age	Office Held	Since	Business Experience Last Five Years
Kent Kresa	55	Chairman, President & CEO	1990	President and Chief Executive Officer; Prior to September 1990, President and COO.
Oliver C. Boileau, Jr.	66	Corporate Vice President, President and General Manager B 2 Division	1992	Vice President, President and General Manager, B 2 Division; Prior to November 1989, Consultant to General Dynamics
Arthur F. Dauer	57	Corporate Vice President and Chief Human Resources Officer	1991	Senior Vice President, Human Resources; Prior to 1991, Director of Human Resources, Hewlett Packard Co.
Marvin Elkin	57	Corporate Vice President Administration and Services	1991	Vice President, Materiel and Services; Prior to 1989, Vice President and Deputy General Manager, B 2 Division
Sheila M. Gibbons	62	Corporate Vice President and Secretary	1992	Vice President and Secretary
Nelson F. Gibbs	56	Corporate Vice President and Controller	1992	Vice President and Controller; Prior to 1991, Partner, Deloitte & Touche
Robert F. Helm	42	Corporate Vice President, Government Relations	1994	Vice President, Legislative Affairs; Prior to 1989, Vice President, Business Development, Space and Aviation Systems Business, Honeywell, Inc.
Charles L. Jones	52	Corporate Vice President, Quality Operations	1991	Vice President and Manager Product Assurance and Productivity Department
Richard R. Molleur	61	Corporate Vice President and General Counsel	1991	Senior Vice President and General Counsel; Prior to 1991, Partner, Winston & Strawn.
John R. Rettberg	56	Corporate Vice President and Treasurer	1992	Vice President and Treasurer
James G. Roche	54	Corporate Vice President and Chief Advanced Development, Planning, and Public Affairs Officer	1993	Corporate Vice President and Chief Advanced Development and Planning Officer; Prior to 1991, Vice President and Special Assistant to the Chairman, President and CEO.
Wallace G. Solberg	62	Corporate Vice President and General Manager Aircraft Division	1991	Vice President and General Manager, Electronics Systems Division; Prior to 1991, Vice President and General Manager, Defense Systems Division.
Richard B. Waugh, Jr.	50	Corporate Vice President and	1993	Vice President, Taxes, Risk

		Chief Financial Officer		Management and Business Analysis
Max T. Weiss	71	Corporate Vice President and Manager, Electronics	1991	Vice President General Technology and Systems Division Advanced Development; Prior to 1991, Vice President Technology; Prior to 1990, Vice President Technical, Electronics Systems Group.

Item 4. Submission of Matters to a Vote of Security Holders
No information is required in response to this Item.

www.secinfo.com



Fran Finnegan & Company

EXHIBIT 8

10-K/A 1 form10k2000.htm

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 10-K/A

(X) ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2000

() TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from
to

Commission file number
1-3229

NORTHROP GRUMMAN CORPORATION

(Exact name of registrant as specified in its charter)

DELAWARE
(State or other jurisdiction of
incorporation or organization)

95-1055798
(I.R.S. Employer Identification
Number)

1840 Century Park East, Los Angeles, California 90067
www.northgrum.com
(Address of principal executive offices and internet site)

(310) 553-6262
(Registrant's telephone number, including area code)
Securities registered pursuant to section 12(b) of the Act:

Title of each class
Common Stock, \$1 par value

Name of each exchange on which registered
New York Stock Exchange
Pacific Stock Exchange

Securities Registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒

No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. (X)

As of February 19, 2001, 72,126,289 shares of Common Stock were outstanding, and the aggregate market value of the Common Stock (based upon the closing price of the stock on the New York Stock Exchange) of the Registrant held by nonaffiliates was approximately \$6,449 million.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the 2001 Annual Meeting of Stockholders. Part III

This amendment on Form 10-K/A is filed to present a composite annual report incorporating the three clerical corrections specified in the 10-K/A filed on March 2, 2001 as well as to make one additional clerical correction contained on the consolidated statements of income on the line item "income from continuing operations before cumulative effect of accounting change." We are filing this composite corrected 10-K in order to provide a single source for the annual report.

NORTHROP GRUMMAN CORPORATION

PART I

Item 1. Business

Northrop Corporation was incorporated in Delaware in 1985. In 1994 the company purchased the outstanding common stock of Grumman Corporation and, effective May 18, 1994, Northrop Corporation was renamed Northrop Grumman Corporation. Northrop Grumman is an advanced technology company organized to operate in three sectors of the broadly defined defense industry: Integrated Systems Sector (ISS), Electronic Sensors and Systems Sector (ES³), and Information Technology (Logicon). ISS includes the design, development and manufacturing of aircraft and aircraft subassemblies. ES³ includes the design, development, manufacturing and integration of electronic systems and components for military and commercial use. Logicon includes the design, development, operation and support of computer systems for defense, scientific and management information.

On December 21, 2000, the Company and Litton Industries, Inc. jointly announced that they had entered into a definitive merger agreement to acquire Litton through a cash tender offer followed by a merger for cash consideration of \$80 per common share and \$35 per preferred share, or approximately \$3.9 billion, plus the assumption of approximately \$1.3 billion in Litton net debt.

General

The company, as a government contractor, is from time to time subject to U.S. Government investigations relating to its operations. Government contractors that are found to have violated the False Claims Act, or are indicted or convicted for violations of other Federal laws, or are considered not to be responsible contractors may be suspended or debarred from government contracting for some period of time. Such convictions could also result in fines. Given the company's dependence on government contracting, suspension or debarment could have a material adverse effect on the company. The company is involved in certain other legal proceedings arising in the ordinary course of business, none of which the company's management believes will have a material adverse effect on the company's financial condition.

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NORTHROP GRUMMAN CORPORATION**Executive Officers of the Registrant**

The following individuals were the elected officers of the Company as of February 2001:

<u>Name</u>	<u>Age</u>	<u>Office Held</u>	<u>Since</u>	<u>Business Experience Last Five Years</u>
Kent Kresa	62	Chairman, President & CEO	1990	
Herbert W. Anderson	61	Corporate Vice President, President and Chief Executive Officer, Logicon, Inc.	1998	Corporate Vice President and General Manager, Data Systems & Services Division
Ralph D. Crosby, Jr.	53	Corporate Vice President and President, Integrated Systems Sector	2000	Corporate Vice President and President Integrated Systems and Aerostructures Sector; Prior to 1999, Corporate Vice President and General Manager, Commercial Aircraft Division; Prior to September 1996, Corporate Vice President and Deputy General Manager, Commercial Aircraft Division; Prior to March 1996, Corporate Vice President and Deputy General Manager, Military Aircraft Systems Division
J. Michael Hateley	54	Corporate Vice President	2000	Vice President, Personnel; Prior

		and Chief Human Resources and Administrative Officer		to January 1999, Vice President Human Resources, Security and Administration, Military Aircraft Systems Division
Robert W. Helm	49	Corporate Vice President, Government Relations	1994	
John H. Mullan	58	Corporate Vice President and Secretary	1999	Acting Secretary; Prior to May 1998 Senior Corporate Counsel
Albert F. Myers	55	Corporate Vice President and Treasurer	1994	
Rosanne P. O'Brien	57	Corporate Vice President, Communications	2000	Vice President, Corporate Communications; Prior to 1999, Vice President, Corporate Communications at Alleghany Teledyne

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NORTHROP GRUMMAN CORPORATION

<u>Name</u>	<u>Age</u>	<u>Office Held</u>	<u>Since</u>	<u>Business Experience Last Five Years</u>
James G. Roche	61	Corporate Vice President and President, Electronic Sensors and Systems Sector	1998	Corporate Vice President and General Manager, Electronic Sensors and Systems Division
Robert B. Spiker	47	Corporate Vice President and Controller	2000	Vice President, Finance and Controller, Electronic Sensors and Systems Sector; Prior to 1999 Business Manager for C ³ &I Naval Systems
W. Burks Terry	50	Corporate Vice President and General Counsel	2000	Vice President, Deputy General Counsel and Sector Counsel; Prior to 1998 Vice President and Assistant General Counsel
Richard B. Waugh, Jr.	57	Corporate Vice President and Chief Financial Officer	1993	

- 10(s) Executive Deferred Compensation Plan (effective December 29, 1994) (incorporated by reference to Form 10-K filed February 25, 1997)
- 10(t) Northrop Grumman Corporation Non-Employee Directors Equity Participation Plan, as amended March 15, 2000 (incorporated by reference to Form 10-Q filed May 9, 2000)

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NORTHROP GRUMMAN CORPORATION

- 10(u) CPC Supplemental Executive Retirement Program (incorporated by reference to Form 10-K filed March 30, 1998)
- 10(v) Northrop Grumman Estate Enhancement Program, effective January 1, 2001
- 10(w) Special Officer Retiree Medical Plan as amended December 19, 2000
- 10(x) Northrop Grumman Corporation March 2000 Change-in-Control Severance Plan (incorporated by reference to Form 10-Q filed November 4, 1999)
- 21 Subsidiaries
- 23 Independent Auditors' Consent
- 24 Power of Attorney

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NORTHROP GRUMMAN CORPORATION

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on the 8th day of March 2001.

By: Robert B. Spiker
 Robert B. Spiker
 Corporate Vice President and Controller
 (Principal Accounting Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed on behalf of the registrant this the 8th day of March 2001, by the following persons and in the capacities indicated.

<u>Signature</u>	<u>Title</u>
Kent Kresa*	Chairman of the Board, President and Chief Executive Officer and Director (Principal Executive Officer)
Jack R. Borsting*	Director
John T. Chain, Jr.*	Director
Vic Fazio*	Director
Phillip Frost*	Director
Lewis W. Coleman	Director
Charles R. Larson*	Director
Robert A. Lutz*	Director
Aulana L. Peters*	Director
John E. Robson*	Director
Richard R. Rosenberg*	Director
John Brooks Slaughter*	Director
Richard J. Stegemeier*	Director
Richard B. Waugh, Jr.*	Corporate Vice President and Chief Financial Officer (Principal Financial Officer)

*By John H. Mullan
 John H. Mullan
 Attorney-in-Fact
 pursuant to a power of attorney

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NORTHROP GRUMMAN CORPORATION

EXHIBIT 9



FORM 10-K

NORTHROP GRUMMAN CORP /DE/ - NOC

Filed: February 20, 2008 (period: December 31, 2007)

Annual report which provides a comprehensive overview of the company for the past year

NORTHROP GRUMMAN CORPORATION

PART III

Item 10. Directors, Executive Officers, and Corporate Governance

Directors

The information as to Directors will be incorporated herein by reference to the Proxy Statement for the 2008 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Executive Officers

The following individuals were the executive officers of the company as of February 20, 2008:

<u>Name</u>	<u>Age</u>	<u>Office Held</u>	<u>Since</u>	<u>Prior Business Experience (Last Five Years)</u>
Ronald D. Sugar	59	Chairman and Chief Executive Officer	2006	Chairman, Chief Executive Officer and President (2003-2006); Prior to April 2003, Chief Executive Officer and President; President and Chief Operating Officer (2001-2003)
Jerry B. Agee	64	Corporate Vice President and President, Mission Systems Sector	2005	Vice President and Deputy Sector President, Mission Systems Sector (2004-2005); Prior to June 2004, Vice President and General Manager, Systems-Missile Defense, Mission Systems Sector (2002-2004)
Wesley G. Bush	46	President and Chief Operating Officer	2007	President and Chief Financial Officer (2006-2007); Prior to March 2007, Corporate Vice President and Chief Financial Officer (2005-2006); Corporate Vice President and President, Space Technology Sector (2003-2005); Corporate Vice President of Northrop Grumman Corporation (2002-2003)
James L. Cameron	50	Corporate Vice President and President, Technical Services Sector	2006	Vice President and General Manager of Defensive and Navigation Systems Divisions, Electronic Systems Sector (2005); Prior to February 2005, Vice President and General Manager, Defensive Systems Division, Electronic Systems Sector (2003-2005); President, ITT Systems Defense Group (2000-2003)
Gary W. Ervin	50	Corporate Vice President and President, Integrated Systems Sector	2008	Corporate Vice President (2007); Prior to September 2007, Vice President, Western Region, Integrated Systems Sector (2005-2007); Vice President, Air Combat Systems, Integrated Systems Sector (2002-2005)
Kenneth N. Heintz	61	Corporate Vice President, Controller and Chief Accounting Officer	2005	Independent Financial Consultant (2004-2005); Prior to June 2004, Corporate Vice President, Hughes Electronics Corporation (now The DIRECTV Group, Inc. (2000-2004))
Robert W. Helm	56	Corporate Vice President, Business Development and Government Relations	1994	

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NORTHROP GRUMMAN CORPORATION

Name	Age	Office Held	Since	Prior Business Experience (Last Five Years)
Alexis C. Livanos	59	Corporate Vice President and President, Space Technology Sector	2005	Vice President and General Manager of Systems Development and Technology and Space Sensors Divisions, and Vice President and General Manager of Navigation and Space Sensors Division, Electronics Sector (2003-2005); Prior to February 2003, Executive Vice President, Boeing Satellite Systems (2000-2003)
Linda A. Mills	58	Corporate Vice President and President, Information Technology Sector	2008	President of the Civilian Agencies business group, Information Technology Sector (2007-January 2008); Prior to February 2007, Vice President for Operations and Processes, Information Technology Sector (2005-2007); Vice President, Mission Assurance/Six Sigma, Mission Systems Sector (2003-2005)
Rosanne P. O'Brien	64	Corporate Vice President, Communications	2000	
James R. O'Neill	54	Corporate Vice President	2008	Corporate Vice President and President, Information Technology Sector (2004-January 2008); Prior to May 2004, President, TASC, Inc. (2002-2004)
James F. Palmer	58	Corporate Vice President and Chief Financial Officer	2007	Executive Vice President and Chief Financial Officer, Visteon Corporation (2004-2007); Prior to June 2004, Senior Vice President, The Boeing Company and President, Boeing Capital Corporation (2000-2004)
C. Michael Petters	48	Corporate Vice President and President, Northrop Grumman Shipbuilding Sector	2008	Corporate Vice President and President, Newport News Sector (2004-January 2008); Prior to November 2004, Vice President, Human Resources, Administration and Trades, Newport News Sector (2001-2004)
James F. Pitts	56	Corporate Vice President and President, Electronics Sector	2005	Vice President and General Manager of Aerospace Systems Division, Electronics Sector (2001-2005)
Mark Rabinowitz	46	Corporate Vice President and Treasurer	2007	Vice President and Assistant Treasurer (2006-2007); Prior to June 2006, Corporate Director and Assistant Treasurer, Banking and Capital Markets (2003-2006)
Scott J. Seymour	57	Corporate Vice President	2008	Corporate Vice President and President, Integrated Systems Sector (2002-2007)
Philip A. Teel	59	Corporate Vice President and President-Elect, Mission Systems Sector	2008	Corporate Vice President and President, Ship Systems Sector (2005- January 2008); Prior to July 2005, Vice President, Airborne Early Warning & Electronic Warfare Systems, Integrated Systems Sector (2000-2005)
W. Burks Terry	57	Corporate Vice President and General Counsel	2000	

Table of Contents

NORTHROP GRUMMAN CORPORATION

<u>Name</u>	<u>Age</u>	<u>Office Held</u>	<u>Since</u>	<u>Prior Business Experience (Last Five Years)</u>
Ian V. Ziskin	49	Corporate Vice President and Chief Human Resources and Administrative Officer	2006	Corporate Vice President, Human Resources and Leadership Strategy (2003-2005); Prior to June 2003, President and Founder, Executive Excellence Group (2002-2003)

Audit Committee Financial Expert

The information as to the Audit Committee and the Audit Committee Financial Expert will be incorporated herein by reference to the Proxy Statement for the 2008 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Code of Ethics

The company has adopted Standards of Business Conduct for all of its employees, including the principal executive officer, principal financial officer and principal accounting officer. The Standards of Business Conduct can be found on the company's internet web site at www.northropgrumman.com under "Investor Relations – Corporate Governance – Overview."

The web site and information contained on it or incorporated in it are not intended to be incorporated in this Annual Report on Form 10-K or other filings with the Securities Exchange Commission.

Item 11. Executive Compensation

Information concerning Executive Compensation, including information concerning Compensation Committed Interlocks and Insider Participation and Compensation Committee Report, will be incorporated herein by reference to the Proxy Statement for the 2008 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information as to Securities Authorized for Issuance Under Equity Compensation Plans and Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters will be incorporated herein by reference to the Proxy Statement for the 2008 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information as to Certain Relationships and Related Transactions, and Director Independence will be incorporated herein by reference to the Proxy Statement for the 2008 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Item 14. Principal Accountant Fees and Services

The information as to principal accountant fees and services will be incorporated herein by reference to the Proxy Statement for the 2008 Annual Meeting of Shareholders to be filed within 120 days after the end of the company's fiscal year.

PART IV

Item 15. Exhibits and Financial Statement Schedule

- (a) 1. Report of Independent Registered Public Accounting Firm on the Consolidated Financial Statements

Financial Statements

Consolidated Statements of Income

Consolidated Statements of Financial Position

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NORTHROP GRUMMAN CORPORATION

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on the 20th day of February 2008.

NORTHROP GRUMMAN CORPORATION

By: **/s/ Kenneth N. Heintz**

Kenneth N. Heintz
Corporate Vice President, Controller, and
Chief Accounting Officer
(Principal Accounting Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed on behalf of the registrant this the 20th day of February 2007, by the following persons and in the capacities indicated.

<u>Signature</u>	<u>Title</u>
Ronald D. Sugar*	Chairman and Chief Executive Officer (Principal Executive Officer), and Director
James F. Palmer*	Corporate Vice President and Chief Financial Officer (Principal Financial Officer)
Lewis W. Coleman*	Director
Vic Fazio*	Director
Donald E. Felsinger*	Director
Stephen Frank*	Director
Phillip Frost*	Director
Charles R. Larson*	Director
Richard B. Myers*	Director
Phillip A. Odeen*	Director
Aulana L. Peters*	Director
Kevin W. Sharer*	Director

*By: **/s/ Stephen D. Yslas**

Stephen D. Yslas
Corporate Vice President, Secretary,
and Deputy General Counsel
Attorney-in-Fact
pursuant to a power of attorney



Jan 20 2009
2:22PM

EXHIBIT 10



(Exempt from filing fees
per Govt. Code, § 6103)

Mar 13 2008
3:14PM

Duane C. Miller #57812
Michael D. Axline, #229840
A. Curtis Sawyer, Jr. #101324
Tracey L. O'Reilly, #206230
Tamarin E. Austin #207903
Evan Eickmeyer, #166652
Daniel Boone, #148841
MILLER, AXLINE & SAWYER
1050 Fulton Avenue, Suite 100
Sacramento, California 95815
Telephone: (916) 488-6688
Facsimile: (916) 488-4288

Attorneys for Plaintiffs
Orange County Water District

**SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF ORANGE**

ORANGE COUNTY WATER DISTRICT,

Plaintiff,

v.

NORTHROP CORPORATION; et al.,

Defendants.

AND RELATED CROSS-ACTIONS.

CASE NO. 04CC00715

**PLAINTIFFS' MOTION TO SEVER
CROSS-CLAIMS; PROPOSAL FOR
TRIAL STRUCTURE; DECLARATION
OF TAMARIN E. AUSTIN**

**Complaint Filed: December 17, 2004
Trial Date: TBD**

Date: April 4, 2008

Time: 10:00

Dept.: CX 104

Judge: Hon. Thierry P. Colaw

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I. INTRODUCTION

Pursuant to California Code of Civil Procedure sections 598 and 1048, subsection (b), plaintiff Orange County Water District (the District) hereby moves to sever all cross-claims in this case from the trial of the District's claims against defendants. Trial of the underlying claims will establish liability with respect to the named defendants and the amount of damages. Cross-claims involving allocation of these damages as between defendants and cross-defendants can then be decided in a subsequent (expedited) proceeding that, in all likelihood, will not require a courtroom or jury.

Northrop's recent addition of nearly 30 new cross-defendants will significantly delay resolution of the underlying complaint. Existing defendants have already slowed discovery and allowing discovery now with respect to newly-added cross-defendants will increase the delay exponentially. Severing the cross-claims from the main case and staying discovery on those cross-claims until resolution of the District's case is both the most efficient method of managing the case and the fastest way to resolve the case.

The cost of discovery (including experts) with respect to the numerous new sites will be immense and this discovery may well turn out to be unnecessary if the District's case is resolved. Finally, the defendants' lawsuits against each other will only create confusion and distract from the relatively straight-forward issues presented in the District's complaint.

The case will proceed in a more orderly fashion if the Court stays discovery and trial on the cross-complaint until a later date. For these reasons, the District proposes that the Court adopt a phased trial: Phase I would involve jury issues; Phase II (if needed) would involve the amount of punitive damages; Phase III would involve a Court trial; and Phase IV would involve trial of cross claims. The District respectfully requests that the Court set a trial date for Phase I in September, 2008.

II. FACTUAL BACKGROUND

This is an action by the Orange County Water District ("the District") to recover damages and obtain relief to remediate groundwater contamination caused by the release of volatile organic chemicals ("VOCs") from numerous sites in the Anaheim Forebay

1 groundwater basin. The District filed its complaint in December, 2004.

2 In August, 2005, following denial of demurrers and motions to strike, Northrop and
3 other defendants filed cross-complaints. The cross-complaints filed at that time (by MAG,
4 Moore, Northrop and Raytheon) were against other parties already in the case as well as a
5 small number of new cross-defendants (PCA, Khyber, Orange County Metal Processing,
6 Weyerhaeuser and AeroTech Plating).

7 In December, 2007, the Court granted Northrop's motion to amend the cross-complaint
8 and Northrop subsequently cross-complained against 24 new cross-defendants. Only days ago,
9 Northrop added three additional "Roe" defendants. Some of the cross-defendants have no
10 apparent assets or insurance, which will undoubtedly lead to delays in answering the amended
11 cross-complaint and make it unlikely that discovery regarding these entities will proceed
12 quickly or indeed at all.¹ Other companies named in Northrop's amended cross-complaint,
13 including Aeroscientific Corp., Circuit Industries, Inc., Commercial Circuits Manufacturing,
14 Globe-Union, Inc., Hinderliter Heat Treating, Inc., Mlodzik Corporation, Roddick Tool Co.,
15 Inc., W.C. Richards Co., and Winonics, Inc. are listed on the Secretary of State's website as
16 "suspended," "dissolved" or "surrendered," (Austin Decl., Ex. 4.) Of these entities, only
17 Hinderliter, W.C. Richards and Winonics, Inc. have appeared. There are obvious difficulties
18 associated with suing entities who are no longer active corporations.

19 Before Northrop's amended cross-complaint, the case was already complex. If we
20 ignore the plumes associated with settling parties Aerojet and AC Products, the remaining case
21 concerns approximately ten defendants, sixteen sites and numerous plumes many of which are
22 commingled, and cover approximately two square miles. In essence, this is like trying sixteen
23 separate cases at once. If we try the cross-complaints at the same time, we will be dealing with
24 approximately 30 additional sites.

25
26
27 ¹ For example, counsel for the District previously disclosed to the Court communications
28 with counsel for PCA informing the District's counsel that PCA had no money and had refused
to authorize counsel to review documents or act in any way, including review of a document
depository stipulation. At least one new cross-defendant, M&M Cleaners, is appearing *in pro per*.

1 **III. SEVERING THE CROSS-COMPLAINTS IS IN THE INTERESTS OF**
2 **JUDICIAL ECONOMY.**

3 The Code permits separate trials of “any cause of action, including a cause of action
4 asserted in a cross-complaint” when “separate trials will be conducive to expedition and
5 economy.” (Cal. Code Civ. Proc. § 1048 (b).) Courts regularly permit bifurcation, or even
6 “trifurcation or multifurcation,” “to avoid wasting time and money” on issues which may be
7 eliminated by presentation of a portion of the issues. (Weil & Brown, *Cal. Prac. Guide Civ.*
8 *Proc. Before Trial* (TRG 2006) § 12:406.)

9 [S]everance of certain issues for separate trial (for example,
10 bifurcation or trifurcation) can be advantageous. Severance can
11 reduce the length of trial, particularly if the severed issue is
12 dispositive of the case, and can also improve comprehension of
the issues and evidence. Severance may permit trial of an issue
early in the litigation, which can affect settlement negotiations as
well as the scope of discovery.

13 (Deskbook on the Management of Complex Litigation (Judicial Council of California 2005) §
14 2.61[3], p. 2-34 (rev. 12/01).) Bifurcation is appropriate where resolution of a subset of issues
15 may eliminate the need for trial on other issues. (*Grappo v. Coventry Financial Corp.* (1991)
16 235 Cal.App.3d 496, 503 [bifurcation appropriate where based on the “obvious futility of
17 inquiring into the issue of whether appellant had been improperly divested of an interest in the
18 property before determining whether or not appellant actually had any interest”].)

19 Although often used to separate liability and damages (*see, e.g., Horton v. Jones* (1972)
20 26 Cal.App.3d 952, 954, 955), bifurcation (or trifurcation) is equally appropriate for certain
21 types of cross-complaints involving indemnity or similar claims. (*Bishop Creek Lodge v. Scira*
22 (1996) 46 Cal.App.4th 1721, 1729-30 [bifurcated cross-complaint for indemnity]; *McCrary*
23 *Constr. Co. v. Metal Deck Specialists, Inc.* (2005) 133 Cal.App.4th 1528 [bifurcated cross-
24 complaint for indemnity].)

25 There are at least three reasons why the Court should sever the cross-claims from the
26 main case and stay discovery on those claims until resolution of the District’s case.

27 First, the recent addition of almost 30 new cross-defendants will mean delaying
28 resolution of the primary case in order to conduct discovery of the cross-claims. This will

1 exacerbate defendants' failure to conduct any discovery concerning the existing cross-
2 defendants

3 Second, many of the cross-claims may be eliminated by the jury findings in the main
4 case. For example, if the District did not claim damages or the jury did not award damages for
5 perchlorate, some of the cross-defendants (such as the Metropolitan Water District) would be
6 out of the case. If the District fails to recover against Northrop, at least twenty cross-
7 defendants would be dropped. The cost of discovery regarding these issues, including experts,
8 concerning the numerous new sites will be immense and possibly unnecessary depending upon
9 the resolution of the District's case.

10 Third, the defendants' lawsuits against each other should not be part of the same trial as
11 the District's case against defendants. The case will proceed in a more orderly fashion if the
12 Court saves defendants' cross-claims for a later, separate stage, avoiding the conflicts and
13 confusion created by a case in which ten defendants and more than 30 cross-defendants each
14 try to blame each other as the source of contamination. (*Forensis Group, Inc. v. Frantz,*
15 *Townsend & Foldenauer* (2005) 130 Cal.App.4th 14, 22 [trial court ordered "that the
16 complaint and the cross-complaints should be tried separately, to avoid any conflicts of
17 interest"].) All of the above authorities support severing and staying the cross-claims to avoid
18 unnecessary expense and delay.

19 **IV. TRYING CROSS-CLAIMS WITH THE UNDERLYING CLAIMS WOULD**
20 **DELAY TRIAL BEYOND THE FIVE-YEAR STATUTE**
AND PREJUDICE THE DISTRICT.

21 By adding several of the new cross-defendants, Northrop has raised new issues on
22 which there has been little to no discovery to date in this case. For example, some of the new
23 cross-defendants, including Kwikset Corporation, W.C. Richards of California, and Winonics,
24 have sites located South of the 91 Freeway, an area where the District has not proposed any
25 remediation. Exhibit 1 to the attached Declaration of Tamarin E. Austin is a plume map
26 depicting known areas of contamination and proposed extraction wells. This map
27 demonstrates the lack of information concerning the area South of the 91 Freeway. Unless the
28 District learns of a failed effort on the part of the Regional Board to manage groundwater

1 contamination in this area, the District does not plan to pursue remediation in this area.

2 Q. With Plate 1 of your report in front of you, can you tell me, is
3 there any portion of Orange County - - the Orange County basin
4 south of the 91 Freeway that you intend to treat as part of the
5 remediation program?

6 A. Not as part of this project.

7 (Austin Decl., Ex. 5, Mark depo. (PMQ regarding North Basin Groundwater Protection
8 Project), p. 332.)

9 With respect to other new cross-defendants, such as the Metropolitan Water District
10 (MET), Northrop has raised new claims concerning the chemical perchlorate, a chemical not at
11 issue in the District's complaint and not the primary focus of the District's proposed
12 remediation system. MET recently filed a demurrer to Northrop's amended cross-complaint.

13 The District filed this lawsuit to recover damages relating to contamination of
14 groundwater by volatile organic chemicals (VOCs). (First Amended Complaint (FAC) ¶¶ 2
15 and 23 ["This action concerns certain volatile organic chemicals (VOCs) which are typically
16 used as solvents, degreasers, and or other industrial purposes."].) The complaint specifies the
17 VOCs at issue. (FAC ¶ 23 [TCE, PCE, 1,1-DCE, 1,2-DCA, 1,4-D, 1,1,1-TCA, 1,1,2-TCA,
18 TCP, 1,1-DCA, methylene chloride, trans-1,2-DCE and cis-1,2-DCE].) Perchlorate is not a
19 chemical listed in the District's complaint, and the complaint does not allege that any
20 defendant used or released perchlorate. (Austin Decl., Ex. 2, Mark Decl., ¶ 12.)

21 The North Basin Groundwater Protection Project (the Project) was developed by the
22 District to address VOC contamination in the Forebay area (Anaheim and Fullerton). (Austin
23 Decl., Ex. 3; Excerpts from 2005 Geologist's/Engineer's Report, p. 1-2.) The Project does
24 this by extracting water containing VOCs, removing the VOCs and reinjecting the treated
25 groundwater upgradient of the extraction wells, in a continuous loop. (Austin Decl., Ex. 2,
26 Mark Decl., ¶ 12.)

27 Water extracted from the aquifer by the District's Project must meet drinking water
28 standards before being reinjected into the aquifer. (Austin Decl., Ex. 2, ¶ 12.) To date, there is
no need to treat for perchlorate. (*Id.*) Should the need to treat for perchlorate arise at some
point in the future, the conceptual design and budget for the treatment plant will accommodate

1 such treatment. (*Id.*) Such treatment, however, would be an incidental, not a direct, cost of the
2 project.

3 The District has taken 40 depositions, covering at least one percipient witness for
4 nearly every site at issue in the First Amended Complaint. (Austin Decl., ¶ 5.) The District
5 has also provided PMQ witnesses for deposition for every defendant in the First Amended
6 Complaint (and Doe amendments), and has provided around 75,000 pages of documents and
7 several downloads of data in response to discovery requests. (*Id.*) Other than a few contention
8 interrogatories, none of this discovery has focused on perchlorate as a contaminant of concern.
9 (*Id.*)

10 Prior to the status conference, with the exception of some written discovery
11 propounded by Raytheon on several now-dismissed cross-defendants, no defendant had
12 performed any discovery concerning any cross-defendant or the associated sites. After the
13 most recent status conference, at which the District raised the issue of a motion to sever the
14 cross-complaints from the primary case, Northrop finally propounded written discovery on
15 several cross-defendants. However, Northrop has not taken a single deposition concerning any
16 cross-defendant.

17 In contrast, discovery concerning the District and defendants is in advanced stages. As
18 discussed at the last status conference statement, the discovery concerning many sites is nearly
19 complete. The Hazardous Substances Account Act and Orange County Water District Act
20 require only that the District show that a defendant owned or operated on a site; a release
21 occurred; and there is contamination emanating from that site. (Health & Safety Code §
22 25323.5 and Water Code Appen. 40-8.) For nearly every site, the District has this evidence
23 already available through defendants' responses to requests for admissions and depositions of
24 defendants' employees and environmental consultants. As described above, the District has
25 taken and completed approximately 40 depositions and provided a person most qualified
26 (PMQ) witness for each defendant named in the First Amended Complaint. The District is
27 prepared to move forward with final discovery and has asked for a trial date in September,
28 2008.

1 The logical resolution of these peripheral issues is to design questions on the special
2 verdict form, the answers to which may eliminate certain cross-defendants or certain issues in
3 the cross-complaints. For example, the jury may determine whether the District may recover
4 for potential perchlorate treatment or whether any of the damages are attributable to sites South
5 of the 91 Freeway. The answers to these queries may eliminate some of the claims against
6 various cross-defendants.

7 If Northrop wishes to pursue claims involving perchlorate, or other satellite claims, it
8 should do so in a severed action involving equitable indemnity following the conclusion of the
9 instant case. Northrop should not be allowed, however, to hijack the District's case after it has
10 reached late stages of discovery and is approaching trial.

11
12 **V. THE DISTRICT PROPOSES A PHASED TRIAL AND REQUESTS A**
13 **TRIAL DATE IN SEPTEMBER, 2008.**

14 The Court has the ability to structure trial in the most efficient manner:

15 The court may, when the convenience of witnesses, the ends of
16 justice, or the economy and efficiency of handling the litigation
17 would be promoted thereby . . . make an order . . . that the trial of
any issue or any part thereof shall precede the trial of any other
issue or any part thereof in the case

18 (Cal. Code Civ. Proc. § 598.) In the interests of judicial economy, the District proposes the
19 following general outline for proceeding at trial:

- 20 1. Jury trial on trespass, negligence and nuisance claims, including findings concerning
21 malice for select defendants, such as Northrop;
- 22 2. If needed, the amount of punitive damages would be determined in a separate phase;
- 23 3. Court trial on HSAA and OCWDA claims and request for declaratory relief;
- 24 4. Discovery and trial on cross claims.

25 This structure will resolve the major questions of fact and law and allow opportunities for
26 settlement at each phase. (*County of Colusa v. California Wildlife Conservation Board* (2006)
27 145 Cal.App.4th 637, 646 ["trial court ordered bifurcation and a limited stay of the entire
28 cross-petition and cross-complaint of the County to allow settlement discussions].)
Frequently, resolution of the issues in the underlying complaint will allow the parties to resolve

1 the cross-complaints in arbitration or some other expeditious non-jury forum, because the
2 findings concerning liability and amount of damages are instructive. (*Kern County Water*
3 *Agency v. Belridge Water Storage District* (1993) 18 Cal.App.4th 77, 84-85 [numerous cross-
4 complaints for reimbursement and other issues bifurcated from trial on declaratory relief and
5 ultimately bifurcated issues were settled]; *Old Republic Ins. Co. v. FSR Brokerage, Inc.* (2000)
6 80 Cal.App.4th 666, 672 [although findings appealed and ultimately reversed, trial court
7 bifurcated cross-claims and bench trial made findings eliminating cross-claims]; and *Erickson*
8 *v. R.E.M. Concepts, Inc.* (2005) 126 Cal.App.4th 1073, 1077 [bifurcation of cross-complaints
9 for indemnity, contribution and declaratory relief; court ordered that jury's findings on issues
10 of negligence, strict liability and causation would be "determinative of those factual issues as
11 they related" to the cross-complaints].)

12 The District respectfully requests a trial date for Phase I in September, 2008. In the
13 recent case management conference statement, defendants argued that waiting another year
14 will provide more data for experts to better evaluate the case. The District, however, takes
15 hundreds of groundwater samples in the litigation area each year, and has for decades. Waiting
16 for a clearer picture of the data is unnecessary. The prospect of "complete" data or "complete"
17 information is facially appealing, but is not achievable as a practical matter and would delay
18 trial indefinitely.

19 VI. CONCLUSION

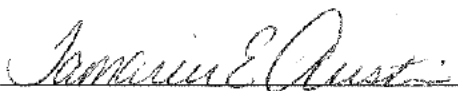
20 Based on the foregoing, the District respectfully requests that this Court grant the
21 District's motion to sever and stay all cross-claims, pending resolution of the District's
22 underlying claims. The District also respectfully requests that the Court adopt the phased trial
23 structure proposed herein.

24 Respectfully submitted,

25 DATED: March 13, 2008

MILLER, AXLINE & SAWYER
A Professional Corporation

26
27 By:



28 TAMARIN E. AUSTIN
Attorneys for Plaintiffs

EXHIBIT 11

NORTHROP

5220-87-44-KE-bc

November 20, 1987

Electro-Mechanical Division
Electronics Systems Group
Northrop Corporation
600 East Olive Avenue
Anaheim, California 92801-1099
Telephone 714 441-3800

Mr. Robert L. Holub, Chief
Groundwater Investigation Section
California Regional Water Quality Control Board
Santa Ana Region
6809 Indiana Avenue, Suite 200
Riverside, California 92506

NOV 23 1987

GUT 11-23
TDP 11/20

Re: Preliminary Investigation Report

Dear Mr. Holub:

In response to your written request, dated November 12, 1987, Northrop Corporation is submitting a preliminary investigation report.

Executive Summary

Five monitoring wells were located at the Northrop Corporation, Electro-Mechanical Division (EMD) site in accordance with the Work Plan approved by the Orange County Health Care Agency. The wells were installed and sampled during the period July 20 - August 31, 1987. Laboratory analyses of groundwater samples collected from the five observation wells completed for this program indicate that the groundwater within the zone investigated at the EMD site contains three organic compounds that exceed the action levels recommended by the California Department of Health Services (DHS). The compounds and their concentrations will be discussed later in this report.

Because the three organic compounds exceed State action levels, the results dictate that additional data is not only needed to substantiate the initial results but necessary in order to base future decisions on a solid scientific foundation.

In order to substantiate analytical findings it was the joint decision of Bechtel and our senior management to conduct a second round of sampling on October 26 and 27, 1987. In addition, it was decided that a third round of sampling will be conducted on November 23 and 24, 1987. Bechtel does not feel that a comprehensive report can be prepared until all three rounds of sampling have been analyzed. A final report will be prepared as soon as the results of the third round of sampling have been received. The final report will include details of the monitoring well installations, sampling procedures, field and laboratory analytical results, permeability test procedures, and data evaluation. The final report will also include a discussion of regional and site geology and groundwater conditions. Appendices containing monitoring well construction details, geologic logs of borings, and results of chemical analyses will be attached. Conclusions and recommendations for additional work, if needed, will be presented.

(continued)

Project Overview

The work is being performed by Bechtel National, Inc. of Norwalk, California under contract to Northrop Corporation, Electro-Mechanical Division, Purchase Order No. BL70B-69033. Beylik Drilling, Inc. La Habra, California, performed all drilling, well installation, and well development; Med-Tax, Inc. of Tustin, California, conducted site health and safety procedures; West Coast Analytical Services of Santa Fe Springs, California, performed laboratory tests of all samples. Field analytical tests, well-purging and sampling, permeability testing and evaluation of all results (all three rounds) are being performed by Bechtel personnel.

Background

In 1986, following discovery of deterioration of the concrete sump used for anodic room operations, Bechtel was contracted by Northrop to perform a detailed examination of the sump to determine the nature and extent of the problem. That investigation concluded that deterioration had advanced to an extent that there was a possibility of leakage from the sump to the underlying soils (Bechtel National, 1986). Consequently, Northrop initiated a preliminary investigation to determine whether or not these soils showed traces of compounds from the sump and, if so, to identify the compounds and their concentrations. This investigation was carried out by Bechtel in November of 1986 and consisted of a soil boring drilled adjacent to the sump, to a depth of 60 feet. This boring revealed the presence of volatile organic compounds, primarily TCE, to the full depth of the hole (Bechtel, 1986). The highest concentration of TCE encountered was 1700 ppb at a depth of 60 feet.

Based on the findings from the soil borings, Bechtel prepared a work plan that was approved by the Orange County Health Care Agency. A copy of the plan was submitted to Mr. Cameron Saremi of your agency at the same time. The work plan was developed to determine whether the compounds had reached the groundwater beneath the site. The work was carried out during the period July 20 - August 31, 1987. The following sections summarize the procedures used and conclusions drawn from that work.

Purpose and Scope

The primary objective of the program was to determine if volatile organic compounds, particularly TCE, are present in the groundwater beneath the site. A second objective of the program was to collect data for a preliminary evaluation of hydrogeologic conditions, principally hydraulic conductivity and hydraulic gradient.

The program was designed for problem detection only. It was not designed to provide extensive characterization of the distribution of compounds if they were detected in the aquifer. Such characterization would be termed problem definition and would be the purpose of subsequent phases of work, if needed.

(continued)

The investigation was restricted to a total depth of 200 feet and a total penetration of the aquifer of 85 feet. The selection of this depth was based on the reasonable assumption that if compounds were present, they would be detected within this zone. The work consisted of drilling and installing five monitoring wells, sampling the wells, performing in-situ testing to determine hydraulic conductivity of the materials, and measuring groundwater levels to determine hydraulic gradient and flow direction.

Preliminary Conclusions and Recommendations

Laboratory analyses of groundwater samples collected from the five observation wells completed for this program indicate that the groundwater within the zone investigated at the EMD site contains three organic compounds that exceed the action levels recommended by the California Department of Health Services (DHS). These are:

- a) 1, 1 Dichloroethene, maximum concentration of 45 ppb, at Well No. MW-4 (DHS action level = 6 ppb).
- b) Trichloroethene (TCE), maximum concentration of 17 ppb, at Well MW-3 (DHS action level = 5).
- c) Tetrachloroethene (PCE), maximum concentration of 10 ppb, at Well No. -4 (DHS action level = 4 ppb).

Monitoring well locations are illustrated on plate 1 (see attached).

In addition to the three compounds exceeding DHS action levels, a few others were found at concentrations lower than action levels. These are:

Toluene

1, 1, 1 - Trichloroethane (TCA)

Cis - 1, 2 - Dichloroethene

Ethyl Benzene

2 - Butanone

Acetone

Ethyl Acetate

Tetrahydrofuran

Carbon Disulfide

(continued)

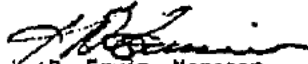
Page Four
Preliminary Report
RWQCB

The second and third rounds of sampling will monitor not only the three chemicals of concern but also the other compounds covered by EPA method 8240 (624). If the data confirms chemical concentrations in excess of action levels, Northrop will instruct Bechtel to initiate actions to determine the vertical and lateral extent of the plume.

The final report will be forwarded to your office no later than 15 February 1988. If you have any questions concerning the Preliminary Investigation Report or the project in general, please feel free to contact me.

Very truly yours,

NORTHROP CORPORATION
Electro-Mechanical Division


K. D. Erwin, Manager
Occupational Health, Safety
& Environmental Administration

KDE:bc

Attachment (1) Site Layout
(2) Laboratory Analyses

EXHIBIT 12

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION
8809 INDIANA AVENUE, SUITE 200
RIVERSIDE, CALIFORNIA 92506
PHONE: (714) 782-4130



March 15, 1988

Ken Erwin, Manager Environmental Administration
Northrop Corporation
Electro-Mechanical Division
500 East Orangethorpe Avenue
Anaheim, CA 92801

REVIEW OF PHASE-I INVESTIGATION REPORT

Dear Mr. Erwin:

This is to provide our concerns regarding the findings of the ground water investigation report prepared by Bechtel Environmental, Inc., dated February, 1988, and to confirm our request for a meeting to discuss the report. The report confirms that there is ground water contamination beneath the site. However, it does not adequately address the possibility that ground water contamination occurred from discharges at the anodic room sump and does not address the possibility that the contaminants originated from discharges elsewhere on-site.

The report implies that the ground water contamination beneath the Northrop facility is attributable to an areawide problem of organics in ground water. Even though it is true that ground water may not be free from organics from a position upgradient of the Northrop facility, in general, wells upgradient of the facility do not show the same contaminants as those found in the on-site monitoring wells. The available information indicates that Northrop may be at least partly responsible for the organic contaminants found in downgradient wells. Contrary to statements made by BEI, the concentrations of contaminants in the on-site monitoring wells are significantly higher than those found in downgradient wells. The report offers no evidence to indicate that ground water contamination is solely originating from an off-site source.

Efforts taken to determine the direction of ground water flow have been inconclusive. Accurate determination of direction of ground water flow is critical in determining whether discharges from the anodic room sump or possible discharges elsewhere on-site have had an impact on water quality. This determination can only be made by accurately surveying the monitoring well elevations and taking more precise water level measurements.

Without conclusive information on the direction of ground water flow, it is impossible to say whether the contaminants in ground water beneath the Northrop facility originated from an off-site

Mr. Ken Erwin

-2-

March 15, 1988

source, the anodic room sump, or elsewhere on site. Therefore, an important part of the Phase II investigation should be properly surveying the monitoring well elevations and taking a series of accurate water level measurements to determine the direction of ground water flow beneath the site.

Lab results for the three rounds of sampling show a significant anomaly. In the last round of sampling no contaminants were identified in two of the monitoring wells which showed several contaminants at levels as high as 90 ppb in previous rounds of sampling. This anomaly may be due to inadequate quality control procedures in taking the samples. Please provide us with a well sampling plan that will assure consistent water quality samples and notify us prior to each round of sampling so that we may obtain split samples. This sampling program may be presented at the meeting or as part of the Phase II workplan.

We have tentatively scheduled the meeting to discuss these issues for 10:00, April 7, 1988, at our office in Riverside. If you have any questions or if this time is not convenient, please call me or Robert Holub, Chief of our Ground Water Investigation Section.

Sincerely,



Thomas D. Peltier
Engineering Geologist

cc: Orange County Health Care Agency - Gary Zimmerman

TDP:ERWIN2

EXHIBIT 13

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION
6809 INDIANA AVENUE, SUITE 200
RIVERSIDE, CALIFORNIA 92508
PHONE: (714) 782-4130



September 21, 1990

Mr. Ken D. Erwin, Manager
Occupational Health, Safety & Environmental Administration
Northrop Corporation
Electronic Systems Division
2301 West 120th Street
P. O. Box 5032
Hawthorne, CA 90251-5032

ANODIC ROOM SOILS INVESTIGATION - PHASE 4

Dear Mr. Erwin:

We have reviewed the above titled report dated August 16, 1990, which was prepared for Northrop Corporation - Electro-Mechanical Division - Anaheim, by your consultant, McLaren Environmental Engineering. In summary, the Phase 4 Report presents the information compiled from the drilling of an additional soil boring beneath the Anodic Room, and the analytical results of soil samples obtained from the boring. The boring was drilled to a depth of 65 feet below grade. The purpose of this investigation was to further define the vertical extent of VOC migration beneath the Anodic Room, since the previous data was inconclusive as to the possible deeper migration of these contaminants.

A soil boring was drilled to the depth of 40 feet, and subsequently advanced to a final depth of 65 feet. Soil samples were taken at five foot intervals between 40 and 65 feet, and the samples from 51, 55, 60 and 65 feet were analyzed for VOCs. I was present during the soil boring activities and obtained a split sample from 60 feet, which was also analyzed for VOCs.

Based on the data, Northrop found VOCs at only one depth. At 55 feet, TCE was detected at 270 ppb and TCA at 388 ppb. No other VOCs were found above their detection limit of 100 ppb. However, our split sample at 60 feet contained TCE at 388 ppb, TCA at 143 ppb, and 1,1-DCA at 14 ppb. This discrepancy might be attributed to the higher detection limits of Northrop's analyses, and localized micro-pockets of VOCs contained in the soil matrix.

N002196

NGSC06326

Mr. Ken D. Erwin

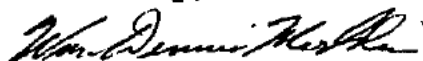
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September 21, 1990

Based on the lower concentrations of VOCs remaining in the soil below 40 feet, we concur with the conclusion made by Northrop, that vapor extraction at depths greater than 40 feet would not be practical. Therefore, we concur that the vapor extraction well can remain at the current 40-foot depth. Although the lower VOC concentrations below 40 feet may not be amenable to effective remediation, groundwater impacts may still result. Therefore, continued monitoring of the shallow groundwater monitoring well outside of the Anodic Room should be sufficient to detect any impacts from the VOCs remaining in the deeper soil depths.

If you have any questions, please contact me.

Sincerely,



Wm. Dennis Merklin
Groundwater Investigation Section

cc: Nira Yamachika - Orange County Water District
Kalim U. Butt - Northrop Electro-Mechanical Division
Bruce Ehleringer - McLaren Hart Environmental

WDM/northlet.5

N002197

EXHIBIT 14

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**SANTA ANA REGION**

6809 INDIANA AVENUE, SUITE 200

RIVERSIDE, CALIFORNIA 92506

PHONE: (714) 782-4130



September 24, 1990

Mr. Ken D. Erwin, Manager
Occupational Health, Safety & Environmental Administration
Northrop Corporation
Electronic Systems Division
2301 West 120th Street
P. O. Box 5032
Hawthorne, CA 90251-5032

**WORKPLAN FOR VAPOR EXTRACTION REMEDIATION AT THE ANODIC ROOM -
NORTHROP EMD FACILITY, ANAHEIM**

Dear Mr. Erwin:

We have reviewed your document titled "WORKPLAN FOR REMEDIATION OF VOLATILE ORGANIC COMPOUNDS BENEATH THE ANODIC ROOM DEGREASER, NORTHROP CORPORATION ELECTRONICS SYSTEMS DIVISION - ANAHEIM, CALIFORNIA" prepared by your consultant, McLaren/Hart Environmental Engineering, dated August 8, 1990.

In summary, this project consists of constructing a vapor recovery system to remove VOCs in the upper 40 feet of soil beneath the Anodic Room. The first task, which was completed on June 2, 1990, consisted of installing a vapor extraction well in the soil boring which was drilled beneath the Anodic Room, with vadose well casing screened to a depth of 40 feet. The system will consist of a vapor extraction and a vapor treatment system. The vapor extraction system will consist of the extraction well, conveyance piping with control valves, various monitoring meters and sampling ports, and a blower at the end of the system to exhaust the air to the atmosphere. The vapor treatment system will consist of 3-200 pound canisters of activated carbon. The system is proposed to be closely monitored and monthly operational reports will be submitted to the Regional Board as well as the South Coast Air Quality Management District (SCAQMD). Required permits will be obtained from the SCAQMD for discharging the treated air stream. Finally, a meeting will be held with Board staff to discuss final results and confirmation drilling and sampling prior to the completion of the soil remediation.

N002193

NGSC06328

Mr. Ken D. Erwin

-2-

September 24, 1990

Based on our review of the work plan and the well installation, we have no objections to the implementation of the proposed plan. Please inform Dennis Merklin of this office when start-up of this system will take place.

If you have any questions, please contact me or Dennis Merklin of our Groundwater Investigation Section.

Sincerely,

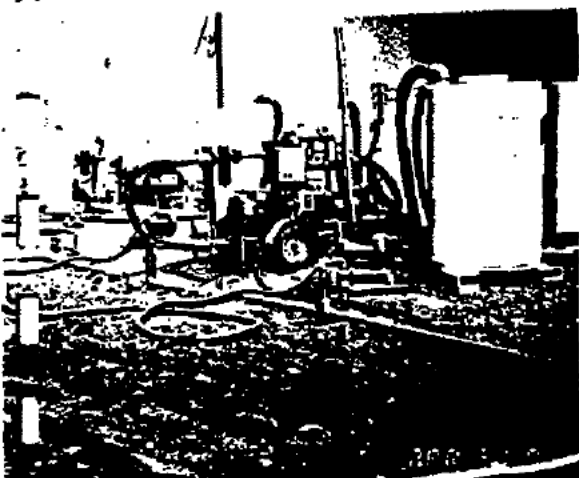
Robert L. Holub
For Robert L. Holub, Chief
Groundwater Investigation Section

cc: Kalim U. Butt - Northrop Electro-Mechanical Division
Bruce Ehleringer - McLaren/Hart Environmental Engineering
Nira Yamachika - Orange County Water District
Bill Diekmann - Orange County Health Care Agency

WDM/northlet.6

N002194

EXHIBIT 15



**SOIL REMEDIATION AND CLOSURE REPORT
FORMER ANODIC ROOM AREA
NORTHROP ELECTRONIC SYSTEMS DIVISION FACILITY
ANAHEIM, CALIFORNIA**

**VOLUME I
MAIN TEXT**



Prepared for:
Northrop Electronic Systems Division

Prepared by:

AWD Technologies, Inc.
1201 Dove Street, Suite 350
Newport Beach, CA 92660



AWD
TECHNOLOGIES



**SOIL REMEDIATION AND CLOSURE REPORT
FORMER ANODIC ROOM AREA
NORTHROP ELECTRONIC SYSTEMS DIVISION FACILITY
ANAHEIM, CALIFORNIA**

Prepared for: Northrop Corporation
Northrop Electronic Systems Division
2301 West 120th Street
P. O. Box 5032
Hawthorne, California 90251-5032

Prepared by: AWD Technologies, Inc.
1201 Dove Street, Suite 350
Newport Beach, California 92660

Date: May 30, 1991

NPS-51-AAA-014

AWD PROJECT NO. 2134-110

AWD Technologies, Inc.

OCWDVOC-0019545

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**NPB-91-RAA-014
AWD PROJECT NO. 2134-110**

CERTIFICATION

AWD Technologies, Inc. hereby certifies that, to the best of its knowledge and based upon the investigation data made available to or gathered by AWD, this Soil Remediation and Closure Report for the former Anodic Room area of the Northrop ESD facility in Anaheim, California has been prepared and the remediation performed in compliance with applicable environmental laws and regulations.



Bradford K. Grow
Project Manager

5.29.91
Date



Walter Loo, C.E.G. #1207
Project Director



5/29/91
Date



Tanya L. Cole, R.E.A. #01003
Registered Environmental Assessor



5.29.91
Date

NPB-91-RAA-014
AWD PROJECT NO. 2134-110

AWD Technologies, Inc.

OCWDVOC-0019552

EXECUTIVE SUMMARY

This Soil Remediation and Closure Report documents the activities that were performed to remediate the soil below the former Anodic Room area of the Northrop ESD facility located at Anaheim, California. The Santa Ana Regional Water Quality Control Board (SARWQCB) served as the lead agency to oversee the soil remediation activities at the Northrop ESD Anaheim facility in coordination with other local agencies: Orange County Health Care Agency (OCHCA) and the Orange County Water District. The OCHCA provided lead agency oversight of soil excavation activities. AWD Technologies was retained to perform the soil remedial activities and to prepare this Soil Remediation and Closure Report for Northrop ESD.

The major tasks performed and reported herein, include:

- Final soil characterization to evaluate the vertical and lateral extent of volatile organic chemicals and metals impacted presence or material and recommendation of final remedial actions.
- Implementation of remedial actions.
- Health and Safety Plan.
- Documentation of remediation and closure confirmation.
- An assessment of risk posed by residual impacted soil at the site.

Northrop's ESD property in Anaheim was initially acquired in 1951, with the first structure (Building Y-1) constructed in 1951-1952. The former Anodic Room was a part of this building. The Anodic Room lies in the northwest portion of the former Y-1 building area. The contents of the former Anodic Room included a vapor degreaser, 42 anodizing tanks, a containment trench and piping within this trench. Previous investigations indicated that chemicals used in the Anodic Room were detected in the subsurface soil.

From 1984 to 1991, Northrop ESD has had several environmental studies performed on portions of the facility. Results of previous and current investigations conducted at the former Anodic Room indicated that the soil was contaminated with TCA, TCE, DCE and DCA. The impacted soil extended laterally approximately 160 feet and vertically up to a depth of approximately 65-70 feet. Limited metal impacted soil was also reported in the shallow subsurface soil of the Anodic Room. A cleanup level of 1 ppm of total volatile organic chemicals (VOCs) was established for onsite soil remediation. Additionally, for limited metals (lead and chromium) containing soil, the level of 5 ppm for both metals was acceptable after analysis of a health based risk assessment.

Potential remedial options were identified, evaluated and screened. As a part of remedial option screening, in-situ vapor extraction followed by excavation and offsite disposal was considered as the most viable option for the remediation of the contaminated soil. The Soil Remediation Work Plan, prepared by AWD, was submitted to SARWQCB and, upon approval of this plan, soil remediation activities were implemented. The SARWQCB was the lead agency for VES remedial activities. The OCHCA was the lead agency for excavation activities.

Pilot scale vapor extraction testing was conducted to obtain the parameters necessary for the full-scale design. Based on the performance of the pilot VES test, a full-scale vapor extraction system was designed and operated at the former Anodic Room area. The system operated successfully for the period of approximately 840 hours at an average air flow rate of 1600 SCFM. The VES operation was enhanced by air injection, soil heating and electro-osmosis in the more clayey areas in order to expedite the soil cleanup effort. After approximately one month of operation, the average VOC concentrations in the soil were reduced to less than 1 ppm in a majority of the vadose zone.

Given the limited availability of time, excavation of the residual VOC soil (greater than one ppm total VOCs) was deemed the most practical remediation approach during the final phase of the project. The Soil Excavation Plan was then prepared by AWD and excavation activities were initiated. Three different types of materials were identified for processing: overburden, VOC-impacted soil, metals-impacted soil, and TPH impacted soil. Each was handled in a distinct manner as described in the following sections. The relative volumes of each of these materials is 36,000 cubic yards, 7,185 cubic yards, 360 cubic yards, and 71 cubic yards, respectively. Approximately, 7,600 cubic yards of total impacted soil was excavated and transported to an offsite facility for disposal as hazardous waste. The excavation was finalized with engineered backfill and clean overburden soil.

The Health and Safety Plan, prepared by AWD for the site closure activities, initially covered the installation and operation of the vapor extraction system. The Site Health and Safety Plan was later updated to address the excavation activities. Health and Safety procedures were implemented throughout the remedial activities at the site in accordance with the plan.

A soil remediation evaluation was performed to assess the effectiveness and compliance of the soil remediation as compared to the proposed soil remediation cleanup level. Table A is a summary of soil remediation and closure analysis. Upon the completion of the VES operations, a final 35 confirmatory soil borings were drilled and 420 soil samples were analyzed for the soil cleanup evaluation. The average total VOC concentration of the 420 soil sample analysis is 0.102 ppm. Of the 420 soil samples, 411 soil samples or 97.8% of all soil samples analyzed were below the proposed cleanup level of 1 ppm.

Since minor residual VOCs concentration existed in the subsurface, Northrop decided to remove any residual VOCs in soil exceeding the 1 ppm total VOCs concentration. Upon the completion of the extensive soil excavation effort, the excavation pit wall and bottom confirmatory soil samples were collected until all soil containing greater than 1 ppm of total VOCs were excavated and disposed of offsite to the Kettleman Hills Class I Landfill. Additionally, metals above the 5.0 ppm DHS Soluble Threshold Limit Concentration (STLC) target level were removed.

Also represented in Table A is the number of samples taken at the bottom of the completed excavation. This sampling, directed by a member of the Orange County Health Care Agency, was performed in three stages. These stages were Primary, Secondary, and Tertiary, and are described as follows. Primary sampling occurred on Sunday, May 19, 1991 as the designed excavation limits were reached. Ten soil samples were taken, six at the bottom and one in

*Dave Knox
is closed
More info
needed
on this
subject*

each slope. This activity was directed from above the excavation. Once the locations were identified, the bottom of the excavation was inspected. Upon inspection it was noted that some residual clay remained at the bottom of the work area. A request was made to OCHCA that an additional amount of material be removed for offsite disposal, and that resampling be allowed. This was the secondary sampling effort, from which five additional samples were generated. All 15 samples, from the primary and secondary rounds were sent to the designated lab for analysis using Orange County Chain of Custody Forms. Backfill and compaction were deferred, pending analytical results. When the results were returned, two of the samples exhibited levels above the established 1 ppm concentration cleanup level. OCHCA was contacted to determine the next step. It was determined that approximately 450 additional yards would be excavated and disposed of offsite, and that a tertiary round of sampling would be performed at the bottom of the new excavation. This additional sampling was performed on Monday, May 20, 1991, under the supervision of OCHCA. The results from these two additional samples showed non-detectable levels of VOCs. This soil remediation effort has achieved the cleanup level as proposed in the Soil Remediation Work Plan (AWD, March 27, 1991).

A qualitative and quantitative risk assessment was performed to determine the health-based risk posed by the residual chemicals (chlorinated solvents and metals) onsite. This risk assessment was prepared using the standard guidance from various documents published by the U.S. Environmental Protection Agency. The results of the risk assessment indicate that the remediated site, to the proposed cleanup objectives, should not pose health risks to site users in accordance with the present evaluation standards.

EXHIBIT 16

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION
8800 INDIANA AVENUE, SUITE 200
RIVERSIDE, CALIFORNIA 92506
PHONE: (714) 782-4130



August 5, 1991

Mr. Ken D. Erwin, Manager
Occupational Health, Safety & Environmental Administration
Northrop Corporation
Electronic Systems Division
2301 West 120th Street
P. O. Box 5032
Hawthorne, CA 90251-5032

FORMER NORTHROP EMD FACILITY, ANAHEIM

Dear Mr. Erwin:

We have reviewed your document titled "SOIL REMEDIATION AND CLOSURE REPORT - FORMER ANODIC ROOM AREA - NORTHROP ELECTRONICS SYSTEMS DIVISION FACILITY - ANAHEIM, CALIFORNIA" which was prepared by your consultant, AWD Technologies, Inc., dated May 30, 1991. We had also previously reviewed the data from the Property Transfer Report dated January 12, 1990. In addition, we closely monitored the soil investigation and remediation activities at the former Anodic Room, and reviewed the recent data from the confirmation sampling of the soil that remains in place.

Based on the above information, we are not requiring any further soil investigation or remediation at this time. The data from the soil investigation and remediation activities that have taken place indicate that the VOCs that remain in the soil at the site do not appear to be present in concentrations that would result in a significant impact on water quality. This finding does not preclude the possibility that currently unknown areas of significant soil contamination may exist at the site. In the future, if such areas are found to exist, Northrop will be responsible for conducting any soil investigation and remediation activities that may be necessary. Our finding that further soil investigation or remediation activities are not necessary at this time does not relieve Northrop of its responsibility to comply with any soil investigation or remediation activities that may be required by other regulatory agencies.

Data from the eight monitoring wells that previously existed at the site and the six monitoring wells that were recently installed at the site indicate that the VOCs present in the soil have apparently not significantly impacted water quality. The concentrations of VOCs in the shallow groundwater beneath the site are currently below the State Drinking Water Maximum Contaminant Levels, indicating that any impacts to the shallow groundwater from VOCs in the soil at this time are minimal.

Mr. Ken D. Erwin

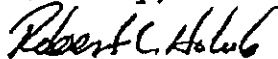
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August 5, 1991

Data from the groundwater monitoring wells that are screened in the deeper groundwater beneath the site show that the concentrations of VOCs in this deeper flow zone are significantly higher than in the shallow groundwater. The concentrations of TCE, PCE and 1,1-DCE in the deeper flow zone have ranged between 3.8 and 140 ppb, <5.0 and 14 ppb, and 4.3 and 110 ppb, respectively. Current information indicates that these VOCs may be originating from an off-site source. However, continued monitoring of the three well pairs installed by Northrop and continued off-site source investigations by Regional Board staff may provide additional information on the source of these VOCs. If additional information indicates that Northrop may be a source of the VOCs present in the deeper flow zone, then Northrop will be responsible for conducting any groundwater remediation or additional groundwater investigation activities that may be necessary.

If you have any questions, please contact me or Dennis Merklin of our Groundwater Investigation Section.

Sincerely,



Robert L. Holub, Chief
Groundwater Investigation Section

cc: Dave Dixon - Orange County Health Care Agency
Barbara Roach - Northrop Electro-Mechanical Division/
Walter Loo - AWD Technologies
Bruce Ehleringer - McLaren/Hart Environmental Engineering
Nira Yamachika - Orange County Water District

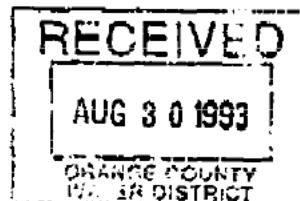
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EXHIBIT 17

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SANTA ANA REGION
2010 IOWA AVENUE, SUITE 100
RIVERSIDE, CA 92507-2409
PHONE: (909) 782-4130
FAX: (909) 782-6288



August 25, 1993

Mr. William Mills
Orange County Water District
10500 Ellis Avenue
P.O. Box 8300
Fountain Valley, CA 92728-8300

MONITORING WELLS AT THE FORMER NORTHRUP EMD FACILITY, ANAHEIM

Dear Mr. Mills:

Northrop Corporation, in a Letter Of Intent dated July 21, 1993, is proposing to cease groundwater monitoring at its former EMD facility at 500 East Orangethorpe Avenue in Anaheim, and desires to abandon the two on-site, down-gradient well pairs and the one off-site, up-gradient well pair. In our July 26, 1993 letter, Regional Board staff concurred with this action. Several years of site monitoring have indicated that contaminants in the groundwater beneath the site probably originate from an off-site source. This is supported by data from the monitoring wells OCWD installed up-gradient of the Northrop property which show the presence of VOC concentrations similar to those found beneath the site. Northrop intends to sell the Anaheim property and states that it must remove the two on-site well pairs. After several meetings between Northrop and Regional Board staff, Northrop provided a Letter Of Intent, which Regional Board staff believes will provide an alternative to the abandonment of these wells and allow continued monitoring of groundwater in the vicinity of the site. We have discussed this matter with Roy Herndon of your staff, and it is our understanding that he concurs with Northrop's proposal.

In the Letter Of Intent, Northrop is proposing to pay the sum of \$50,000.00 for the relocation and replacement of the two down-gradient well pairs to a location near, but off of, Northrop's property. Also, they propose to transfer title of the up-gradient well pair, located on the AT&SF Railroad right-of-way, to the Regional Board or its agreed Agent. Since the OCWD is interested in obtaining long term monitoring data in this area and because the OCWD has experience and knowledge in installing groundwater monitoring wells, we request that the OCWD act as the Regional Board's Agent, receive the \$50,000.00 from Northrop and locate and install the two proposed down-gradient well pairs. In addition, we request that the OCWD accept title to the off-site, up-gradient well pair.

August 25, 1993

OCWD-VOC 032205

EXHIBIT 18

MW
(File)

September 17, 1993

Mr. Gerard J. Thibeault, P.E., Executive Officer
Regional Water Quality Control Board, Santa Ana Region
2010 Iowa Avenue, Suite 100
Riverside, CA 92507-2408

Dear Gerry:

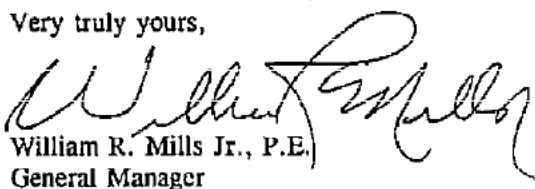
Northrop Corporation monitoring wells

At its regular meeting held September 15, 1993, the Orange County Water District Board of Directors took the following action regarding Northrop Corporation monitoring wells:

1. Authorized acceptance of a check in the amount of \$50,000 from Northrop Corporation as payment in full for the costs for OCWD to construct and monitor two shallow monitoring well pairs which will replace two existing monitoring well pairs on Northrop Corporation property in the City of Anaheim; and
2. Approved the transfer of ownership to the District of two monitoring wells (MW-8 and MW-9) constructed by Northrop east of its Anaheim site on property owned by the AT&SF Railroad, contingent upon receipt of a site access license from the Orange County Transportation Authority.

District staff are now proceeding with acquisition of replacement well sites, and we will keep you apprised of our progress.

Very truly yours,


William R. Mills Jr., P.E.
General Manager

cc: Mr. Norman Sealander, Corporate Environmental Management
Northrop Corporation

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EXHIBIT 19

1 IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
2 IN AND FOR THE COUNTY OF ORANGE

3 -oo-

4 ORANGE COUNTY WATER DISTRICT,
5 Plaintiff,

6 vs.

No. 04CC00715

7 NORTHROP CORPORATION; et al.,
8 Defendants.

9 _____ /

10
11
12 DEPOSITION OF DAVE MARK, P.G., C. HG.

13 November 8, 2007 at 10:00 (10:12) a.m.

14 Before: ERIC L. JOHNSON
15 RPR, CSR #9771

16 Taken at:
17 Costa Mesa, California
18
19
20
21
22
23
24
25

1 is overly broad; it's compound; vague and ambiguous.

2 MR. SMITH: You can answer.

3 MR. SAWYER: Don't guess.

4 THE WITNESS: Yeah, I am not aware. I haven't
5 seen documents. I have focused on the technical
6 documents and observed contaminations.

7 MR. SMITH: Q. In reviewing all of the
8 technical documents that you have reviewed before today,
9 have you seen anything in any of them that suggested
10 that any of the mechanisms of release included an
11 employee or person at Northrop purposely releasing
12 contamination --

13 MR. SAWYER: Objection --

14 MR. SMITH: -- at EMD?

15 MR. SAWYER: Objection; overly broad; vague and
16 ambiguous; lack of foundation; calls for speculation.
17 Please don't guess.

18 THE WITNESS: I don't know.

19 MR. SMITH: Q. Did you -- strike that.

20 Have you ever heard anybody from OCWD, such as
21 Roy Herndon or anybody else who was employed back in the
22 1980's, say anything to you to the effect that Northrop
23 had intentionally released contamination at any time at
24 the EMD site?

25 A. Nobody at the District and I have had any kind

1 of discussions regarding that.

2 Q. Have any witnesses or former employees of
3 Northrop Grumman ever reported to you or anybody else at
4 OCWD that there were any purposeful or intentional
5 releases of contamination?

6 A. Not that I am aware of. I did come across a
7 letter from Roy Herndon to the Regional Board where it
8 was reportedly a former employee, called LA City Fire
9 Department and said there was radioactive wastes that
10 were discharged down an old well and -- but I personally
11 haven't -- and I am not aware of anything other than
12 that.

13 Q. Okay. And did you see that that allegation was
14 investigated?

15 MR. SAWYER: Objection; assumes facts not in
16 evidence; lack of foundation.

17 THE WITNESS: In the letter I just noted, the
18 site was closed off. In fact, there was a consultant
19 working for a prospective buyer, Taiyo or - I am not
20 sure how you pronounce it - that had to stop some of
21 their investigative work until they were -- the site was
22 opened up again.

23 But frankly, I haven't focused on radioactive.
24 I have been focusing on VOCs, so I haven't researched it
25 much.

1 MR. SMITH: Q. You haven't seen -- strike
2 that.

3 Do you have any information that any Northrop
4 Grumman employee or any other witness has ever reported
5 to the District that there was ever any intentional
6 release of VOCs at the EMD site?

7 A. Not that I am aware of.

8 Q. Okay. For how many years has the District been
9 aware that there was VOC contamination at the EMD site?

10 A. Well, I have only been with the District a
11 little over two years. But judging from this --

12 MR. SAWYER: Well, in that case, let me just
13 object on the grounds it calls for speculation; lack of
14 foundation as to any period predating his employment.
15 You can answer subject to those objections.

16 THE WITNESS: I can see this May 15th, 1987,
17 letter, so that was in the District files. Now, I am
18 not sure when the District received a copy of this
19 letter, so my guess is sometime --

20 MR. SAWYER: Please don't guess.

21 THE WITNESS: Yeah. Well, I guess I just want
22 to say that it doesn't -- the District was not copied on
23 this letter, therefore, the District would have received
24 a copy at some future date. I don't know when. When
25 they did a Regional Board file review. So bottom line

1 is, I have no idea when the District learned about
2 releases at the Northrop site.

3 MR. SMITH: Would it have been within a year of
4 the date of this letter?

5 MR. SAWYER: Objection. In view of his prior
6 testimony, it calls for speculation.

7 THE WITNESS: I don't know.

8 MR. SMITH: Let's go to Exhibit 2.

9 This is a November 20, 1987, letter to
10 Mr. Holub at the Regional Board, from Ken Erwin.

11 Q. Is this one of the items that you reviewed to
12 prepare yourself for today's testimony?

13 A. Yes.

14 Q. Did this letter have any particular
15 significance to you in terms of the subject matter of
16 your testimony for today?

17 A. Yes. And I noted that 1,1-DCE and TCE and PCE
18 were detected in groundwater concentrations above, at
19 that time, what was an action level. It predates the
20 MCL.

21 It mentioned deteriorated concrete sump in the
22 anodic room operations. It mentioned that boring again,
23 with TCE at the bottom of that boring, 60 feet. So
24 again, it showed that there is high concentrations at
25 depth, 1700 PPB of TCE at 60 feet, as well as the

1 MR. SMITH: Q. You don't know?

2 A. Yeah, I don't know.

3 Q. Do you have -- as you sit here, do you have any
4 information as to how much it would cost to excavate
5 7600 cubic yards --

6 MR. SAWYER: Objection --

7 MR. SMITH: -- and dispose of it?

8 MR. SAWYER: -- vague and ambiguous; lack of
9 foundation.

10 THE WITNESS: No, I don't, off the top of my
11 head.

12 MR. SMITH: Q. Based upon your experience in
13 the industry, you have given us your background in prior
14 sworn testimony, do you have any range of estimates as
15 to what this remediation would cost?

16 MR. SAWYER: Objection; vague and ambiguous.

17 THE WITNESS: I mean --

18 MR. SAWYER: Let me finish. Lack of
19 foundation. We are talking about -- I am sorry, what's
20 the time period here for the report? 1991. Calls for
21 speculation.

22 THE WITNESS: Yeah, I mean, I would, off the
23 top -- I just don't recall, off the top of my head. I
24 mean, I have notes and have worked on projects involving
25 excavations, but I can't recall off the top of my head

1 what that generally costs.

2 MR. SMITH: Q. Would you agree that the amount
3 of SVE and excavation done here would have had to have
4 cost millions of dollars?

5 MR. SAWYER: Objection; calls for speculation;
6 lack of foundation; assumes facts not in evidence.

7 THE WITNESS: Yeah, I wouldn't be surprised.

8 MR. SMITH: Q. And you understood that this
9 work was all done pursuant to a work plan submitted to
10 the Regional Board, correct?

11 MR. SAWYER: Objection; misstates his prior
12 testimony; vague and ambiguous; compound.

13 THE WITNESS: Yeah, I believe I read in this
14 document, maybe I made a note in here, that the Regional
15 Board did oversight of the soil vapor extraction, and
16 the Orange County Healthcare Agency provided oversight
17 of the excavation. So most likely this work plan was
18 submitted to both agencies.

19 MR. SMITH: Q. Right. Did the District have
20 any regulatory oversight of this remediation?

21 MR. SAWYER: Objection; calls for a legal
22 opinion.

23 A. No.

24 MR. SMITH: Q. Was -- did the District have
25 any input into the nature or scope or extent of this

1 no further action letter for soil and groundwater.

2 Q. Did -- was OCWD consulted before the Regional
3 Board concluded that no further action was required by
4 Northrop on this site?

5 A. I am not sure. I don't know.

6 Q. I see that the letter is copied to Nira
7 Yamachika at the Orange County Water District. Who was
8 that person and what was her position?

9 A. Nira is -- she's in charge of our water quality
10 group. And this is currently. So in other words, she's
11 in charge of the crews that go out and sample OCWD's
12 monitoring wells.

13 Q. This particular exhibit comes from OCWD's
14 files, does it not?

15 A. Yes.

16 Q. And it bears the "Received" stamp. Does this
17 copy bear a "Received" stamp?

18 A. Yes, this was in our files. I reviewed it in
19 our files.

20 Q. Okay. Based upon your conversations with Roy
21 Herndon and Nira and anybody else at OCWD, plus your
22 review of your files, did you see any indication that
23 OCWD had any objections or reservations about the
24 Regional Board's issuance of this no further action
25 letter?

1 MR. SAWYER: Objection; compound.

2 THE WITNESS: Well, as I look at Roy's letter
3 of memorandum to the Regional Board, it appears that he
4 did have -- the District did express some concerns.

5 MR. SMITH: Q. When was that?

6 A. Well, there's one letter, December 4th, '91,
7 from Roy to Robert Holub, and that was following his
8 discussions with a Ms. Reynolds at Garrity Miller, the
9 consultant to Taiyo.

10 And then there's another letter, August 4th,
11 '92, a memo from Roy to Dennis Merklin at the Regional
12 Board, with comments on AWD's report. And in that, I
13 think -- well, I think I mentioned earlier --

14 Q. And both of those letters were months after the
15 actual no further action letter, correct?

16 A. That is correct.

17 Q. And as far as you know, at no time before the
18 Regional Board issued this letter was there any
19 objection or reservation within OCWD to this action?

20 MR. SAWYER: Objection; lack of foundation;
21 calls for speculation.

22 MR. SMITH: Correct?

23 MR. SAWYER: Same objections.

24 THE WITNESS: I don't know. That was before my
25 time.

1 MR. SMITH: Q. Well, in preparing for today's
2 deposition, have you come across any information that
3 suggests to you that before August 5, 1991, the District
4 in any way opposed the Regional Board's issuance of this
5 no further action letter to Northrop?

6 A. I didn't come across any documents indicating
7 that.

8 Q. As far as the District is concerned, is a
9 company such as Northrop entitled to rely upon a
10 Regional Board determination that no further action is
11 required with regard to remediation at a site?

12 MR. SAWYER: Objection; calls for a legal
13 opinion; calls for speculation; lack of foundation.
14 Also calls for an expert legal opinion.

15 THE WITNESS: I am -- the Board has the
16 authority to make that determination.

17 MR. SMITH: Q. And do you -- now, in the
18 letter, the Board asserts that it closely monitored the
19 soil investigation and remediation activities.

20 Do you have any information that suggests that
21 that is any way exaggerated or untrue?

22 MR. SAWYER: Objection. Vague; ambiguous;
23 compound.

24 THE WITNESS: I don't have any information to
25 indicate that the Board was not being truthful in that

1 statement.

2 MR. SMITH: Q. I mean, the Board was being
3 truthful in this statement, correct?

4 MR. SAWYER: Object. Let me get my objections
5 in. Calls for speculation as to the state of mind of
6 the Board; lack of foundation; speculation.

7 MR. SMITH: Q. As far as you know.

8 A. As far as I know, yeah.

9 Q. And where it says, "We are not requiring any
10 further soil investigation or remediation at this time,"
11 is it your understanding this is a reference to not
12 requiring Northrop to do anything?

13 MR. SAWYER: Objection; speculation; lack of
14 foundation.

15 THE WITNESS: That's my understanding. The
16 Board also mentions though that if they, you know, find
17 a reason to -- some other information to indicate there
18 are other sources, they will require Northrop to do
19 work. So --

20 MR. SMITH Q. If something new happens, they
21 would reserve the right to reopen this.

22 A. You bet.

23 Q. Okay. But in terms of what the Board was
24 saying in August of 1991, would you agree that the
25 Board's position was that all of the available evidence

1 A. Okay.

2 Q. Now, the letter is written by Mr. Herndon and
3 sent to only the Regional Board, correct?

4 A. That is correct.

5 Q. Do you see anything in this letter that
6 purports to disagree with the no further action letter
7 that the Regional Board issued the prior August?

8 A. No.

9 Q. Who is Jim Goodrich?

10 A. Jim Goodrich used to be the chief
11 hydrogeologist, the position Roy now has. So at that
12 time Roy worked under Jim Goodrich.

13 Q. Where is he now?

14 A. He is at some small water district up in, I
15 believe, the foothills of the Sierras somewhere, you
16 know. I couldn't tell you the name of the city but --

17 Q. Okay. Let's go to the other letter you
18 mentioned, by Mr. Herndon, and that was exhibit --
19 that's a memo, actually, Exhibit 10. It is dated
20 August 4, 1992.

21 MR. SAWYER: Which exhibit is that?

22 MR. SMITH: That's 10.

23 Q. And it is comments on the May 30, 1991, closure
24 report from AWD. Right?

25 A. Yes.

1 Q. Do you know why Roy was reviewing this more
2 than a year after receipt of the report?

3 A. I don't know.

4 Q. Do you have any idea what had happened to
5 prompt him to do this review of that 1991 report in
6 August of 1992?

7 MR. SAWYER: Objection; asked and answered;
8 calls for speculation.

9 THE WITNESS: I don't know.

10 MR. SMITH: Q. Have you talked to Roy about
11 why he wrote this memo?

12 A. No.

13 Q. At point five, it states, "The soil study and
14 cleanup by AWD for Northrop appears to have been a
15 thorough and comprehensive project from a soil
16 remediation standpoint, and Northrop can be commended
17 for this effort."

18 Do you share that assessment of the AWD report,
19 after your review of it, in preparation for today's
20 testimony?

21 MR. SAWYER: Objection; improper opinion
22 testimony.

23 THE WITNESS: I mean, any remediation is a good
24 thing. I guess I would concur with Roy's second
25 sentence under number five.

1 MR. SMITH: Well, I will get there.

2 Q. Do you concur with the first sentence?

3 A. In terms of the cleanup level that was agreed
4 of one part per billion, yes, they seem to have done a
5 pretty good job in attacking, you know, that one part
6 per billion threshold.

7 But you know, one part per million or a
8 thousand parts per billion, when you have drinking water
9 standards in the low parts per billion, still leaves the
10 question of threat to groundwater. And frankly, even
11 these days, I don't know that agencies would agree on a
12 1 ppm threshold for soil cleanup. Some of those
13 thresholds, particularly with indoor air concerns, have
14 dropped more recently.

15 But at this time, and what AWD did, their
16 efforts based on a 1 ppm cleanup threshold, it looked
17 like they did, you know, a pretty good job.

18 Q. And the 1 ppm threshold for soil was standard
19 of care back then, correct?

20 MR. SAWYER: Let me -- objection; vague and
21 ambiguous; calls for an expert opinion; lack of
22 foundation. Also vague as to term "standard of care."

23 THE WITNESS: Different cleanup levels have
24 been used at different sites. There hasn't really been
25 a standard level, based on my experience. But I can

1 investigated?

2 A. Not that I am aware of.

3 Q. Is there any reason you haven't asked the
4 Regional Board to have Northrop investigate dioxane at
5 EMD?

6 A. We just haven't had those discussions. Yeah.

7 Q. Have you ever thought it was necessary to have
8 those discussions?

9 A. I think it will depend on what we see in our
10 regional containment system. We have told the Board in
11 general terms, not site specific, that we really need to
12 rely on them to make sure these sites are remediated
13 adequately, so we don't have to operate this regional
14 pump and treat system forever.

15 Q. Is that called source control?

16 A. Yes. Yes.

17 Q. Have those communications all been oral or have
18 you communicated in writing as well?

19 A. I believe those communications have been oral,
20 although we have seen that reflected in some of the
21 Board letters, in fact, I believe related to the other
22 Northrop site, the Y-12 site. I believe I saw --

23 MR. SAWYER: I just want you to -- he's only
24 here for one site, as a PMQ.

25 THE WITNESS: Okay. Bottom line --

1 MR. SAWYER: Just answer his question about
2 this site.

3 THE WITNESS: The board is aware of it and
4 dealing with that issue on active sites. I am not
5 aware, they have not reopened this site.

6 MR. SMITH: Q. As far as the District is
7 concerned, is Northrop entitled to continue to rely upon
8 the no further action letter it received from the
9 Regional Board with regard to the EMD site?

10 MR. SAWYER: Objection to the extent it asks
11 for the deliberative privilege; calls for speculation;
12 calls for expert legal opinion.

13 MR. SMITH: Q. You can answer.

14 A. Again, to my knowledge, the Board has not
15 rescinded and Northrop has not been required to do any
16 further action at this site.

17 Q. Do you think it is wrong for Northrop to have
18 relied upon the Regional Board's no further action
19 letter?

20 MR. SAWYER: I will instruct him not to answer
21 that. That's an improper contention question. You are
22 asking for a legal opinion. I instruct you not to
23 answer that question.

24 MR. SMITH: What time do you want to have
25 lunch?

1 MR. SAWYER: Well, it is 12:30.

2 (Discussion held off the record)

3 MR. SMITH: Why don't we go off the record.

4 THE VIDEOGRAPHER: Off the record at 12:35.

5 (Lunch recess taken 12:35 - 1:36 p.m.)

6 THE VIDEOGRAPHER: On record, 1336.

7 MR. SMITH: Q. Mr. Mark, do you understand
8 that even though Northrop received the no further action
9 letter from the Regional Board, it continued to
10 undertake groundwater monitoring at the EMD site?

11 MR. SAWYER: Objection; assumes facts not in
12 evidence; lack of foundation.

13 MR. SMITH: Q. If you know that.

14 A. Yeah, I am not -- I don't recall when they
15 stopped their monitoring. I would have to take some
16 time and slog through the documents.

17 Q. Well, let me --

18 A. But I will trust you.

19 MR. SAWYER: Don't trust him.

20 MR. SMITH: Don't do that.

21 MR. SAWYER: Don't speculate.

22 MR. SMITH: Don't do that.

23 Q. Let's go to Exhibit 10, which is Roy's memo to
24 Merklin.

25 And in the very second to the last paragraph,

1 the site anymore, it didn't do anything with regard to
2 the drinking water after 1991?

3 MR. SAWYER: All right. That's an improper
4 contention question. I am going to instruct him not to
5 answer.

6 MR. SMITH: Q. Did -- are you aware of
7 anything that any Northrop Grumman employee should have
8 done after 1991 with regard to the drinking water, which
9 they didn't do?

10 MR. SAWYER: Objection; contention question.
11 You are asking a negligence issue. Instruct him not to
12 answer.

13 MR. SMITH: Q. Does anybody at the District
14 have any information about the identity of any Northrop
15 Grumman employee who did anything improper with regard
16 to the drinking water in the aquifer after 1991?

17 MR. SAWYER: Same instruction. Instruct you
18 not to answer. Improper contention question; calls for
19 speculation; compound.

20 MR. SMITH: Q. Do you have -- have you seen
21 any documents, in connection with your preparation for
22 today's deposition, as the most qualified person to
23 testify on the EMD site, are you aware of any
24 information in that document which discloses the name of
25 any Northrop Grumman employee who did anything at all

1 with regard to the site to contaminate the drinking
2 water?

3 MR. SAWYER: Objection; calls for speculation;
4 overly broad; vague and ambiguous. You can try to
5 answer the question subject to that objection.

6 THE WITNESS: After 1991?

7 MR. SMITH: (Nods head).

8 THE WITNESS: I haven't seen documentation that
9 Northrop did anything active on that site.

10 MR. SMITH: Q. Are you aware of any regulatory
11 directives by any agency of the government to Northrop
12 Grumman, after 1991, that were not complied with?

13 MR. SAWYER: Objection; vague and ambiguous;
14 calls for speculation; lack of foundation; also
15 compound.

16 THE WITNESS: I am not aware of any.

17 MR. SMITH: Q. Have you heard from any source
18 within the District, or seen anything in any documents
19 you have reviewed before today, which suggests that
20 Northrop in any way obstructed any regulatory effort to
21 remediate the property at EMD?

22 MR. SAWYER: Objection; vague and ambiguous;
23 compound; calls for speculation; lack of foundation.

24 THE WITNESS: Not that I am aware of.

25 MR. SMITH: Q. Has anybody from Northrop ever

1 misrepresented any facts or lied to the District or the
2 Regional Board, as far as you know, with regard to the
3 EMD site?

4 MR. SAWYER: I will instruct him not to answer.
5 It is an improper contention question. Also calls for
6 speculation as to the state of mind of your client.
7 Instruct you not to answer.

8 MR. SMITH: Q. Are you aware of any
9 information at all which suggests any misstatement of
10 fact has ever been made to the District by any Northrop
11 employee with regard to the EMD site?

12 MR. SAWYER: Objection; calls for speculation;
13 compound; vague and ambiguous. Also asks an improper
14 contention question. Instruct you not to answer.

15 MR. SMITH: Q. Are you aware, based upon your
16 review of the documents and your discussions with people
17 at the District, of any misstatement made by Northrop or
18 its employees at any time to anybody at the Regional
19 Board about cleanup activities at the EMD site?

20 MR. SAWYER: Objection; vague; ambiguous;
21 overly broad; lack of foundation; calls for speculation.
22 It is also an improper contention question. Instruct
23 you not to answer.

24 MR. SMITH: Q. Do you know of any fact
25 related -- strike that.



Jan 20 2009
2:22PM

EXHIBIT 20

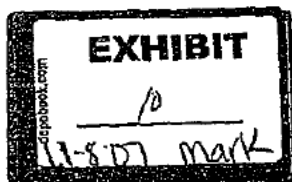


MEMORANDUM

DATE: August 4, 1992
TO: Dennis Merklin, Santa Ana RWQCB
FROM: Roy Herndon
SUBJECT: COMMENTS ON AWD TECHNOLOGIES SOIL INVESTIGATION AT
NORTHROP SITE IN ANAHEIM

After reviewing the *Soil Remediation and Closure Report, Former Anodic Room Area* by AWD Technologies (May 30, 1991) on the VOC soil investigation and remediation at the Northrop property in Anaheim, California, I present the following comments for your consideration:

1. The main objective of the on-site soil investigation by AWD appears to have been to determine the extent of VOCs in the soil for the purpose of determining soil remediation limits. This objective does not fully address the remaining issue of the relationship between on-site soil VOC contamination with known groundwater VOC contamination beneath the site. The stated soil cleanup level was 1 ppm total VOCs. Many borings were terminated when total VOC concentrations were less than 1 ppm, but detectable levels of TCE and other VOCs were present in the bottom-most soil samples collected as deep as 70 feet bgs, indicating that VOCs may have reached the groundwater beneath the site (see borings VB-1, -2, -5, -6, -9, VT-1, -2, -3, CSR4-1, -3, -7, -8, -12, -14, -17, -19, -24, -26, -30, -32).
2. All soil borings by AWD were terminated at depths of approximately 70 feet bgs or less, even though detectable levels of TCE were present in many of the deepest soil samples. In several borings, the deepest soil sample with non-detectable levels of TCE was within only 5 feet of a shallower soil sample with detectable levels of TCE (see borings VB-3, -7, -8). Because VOC limits and pathways within the vadose zone have not been defined beneath the site (including areas outside the former Anodic Room), it would be premature to conclude that groundwater VOC contamination beneath the site is unrelated to the soil contamination. In fact, the VOCs (TCE, PCE, 1,1 DCE, and 1,1,1 TCA) found in the soil, being the same VOCs found in both the shallow and deeper groundwater beneath the site, indicate just the opposite conclusion.



3. I found the boring location maps in AWD's report difficult to read and incomplete. At least 53 "interim soil borings," for which soil samples were collected and analyzed, were not located on any of the maps in the documents I reviewed. It would be helpful if such a map could be provided by Northrop.
4. Table 5-1, summarizing soil VOC analytical results, appears to be incomplete. VOC data from borings CSR4-16 through -35 and the 53 "Interim" soil borings had to be reviewed by combing through the raw laboratory reports in Appendix B. It would be helpful if a complete Table 5-1, with soil analyses for all borings, could be provided by Northrop.
5. The soil study and cleanup by AWD for Northrop appears to have been a thorough and comprehensive project from a soil remediation standpoint, and Northrop can be commended for this effort. However, the data presented in the AWD report indicate that VOCs in the soil have not been delineated laterally or vertically beneath the site, leaving the issue of groundwater contamination source areas unresolved.

Based on available soil and groundwater data collected at and near the Northrop site, continued investigation is warranted to define the limits of groundwater VOC contamination and to determine source areas. In light of this, Northrop's request to discontinue its quarterly groundwater monitoring program (and to destroy its on-site wells) is not justifiable at this time, in my opinion. All existing wells are necessary for continued VOC plume tracking and may eventually be required to monitor future groundwater remedial activities.

We can discuss this project further at our next meeting.

EXHIBIT 21

1 IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
2 IN AND FOR THE COUNTY OF ORANGE

3 -oo-

4 ORANGE COUNTY WATER DISTRICT,
5 Plaintiff,

6 vs.

 No. 04CC00715

7 NORTHROP CORPORATION; et al.,
8 Defendants.

9 _____ /

10
11
12 DEPOSITION OF ALEC UZEMECK

13 April 22, 2008 at 10:00 (9:58) a.m.

14 Before: ERIC L. JOHNSON
15 RPR, CSR #9771

16 Taken at:
17 Los Angeles, California
18
19
20
21
22
23
24
25

1 by the Certified Shorthand Reporter, deposed and
2 testified as follows:

3 THE VIDEOGRAPHER: Please proceed.

4 EXAMINATION BY MR. MILLER

5 MR. MILLER: Q. Please state your name and
6 business address for us.

7 A. My name is Alec Uzemeck. Last name is
8 U-z-e-m-e-c-k. My home address is PRVY-Controlled/Privacy
9 in PRVY-Controlled/Privacy

10 Q. Are you retired?

11 A. I am retired.

12 Q. When did you first work for a -- Northrop
13 Corporation?

14 A. 1984, I believe.

15 Q. And what location were you assigned to at that
16 time?

17 A. I was with the Electronics Division, Hawthorne.

18 Q. And when did you retire from Northrop?

19 A. April 1999.

20 Q. During what portion of your employment were you
21 assigned to the Y-12 facility?

22 MR. SMITH: Objection; assumes a fact but you
23 can respond.

24 THE WITNESS: Initially it was in 1990.

25 MR. MILLER: Q. What was your job title at

1 that time?

2 A. I was a manager of Facilities Environmental and
3 Safety.

4 Q. And when did that assignment end?

5 A. Let's see. I transferred to the Aircraft
6 Division and I think it was two years later. It was in
7 1993.

8 Q. After you transferred to the Aircraft Division
9 in approximately 1993, did you have any further
10 responsibilities for Y-12 at all?

11 A. Yes. I was in charge of the Environmental
12 Department and I had responsibility for Y-12.

13 Q. Were you in charge of the Environmental
14 Department for the division or for particular
15 facilities? How did that work?

16 A. I was the facilities manager for the division,
17 Aircraft Division.

18 Q. What does it mean to be a facilities manager?

19 (Mr. Sites entered the room)

20 A. It means that I would be in charge of
21 construction, demolition, building laboratories,
22 offices, manufacturing space, tearing down buildings,
23 maintenance, repair, janitorial, anything associated
24 with the buildings. And then in my environmental
25 capacity, I was in charge of the organization that did

1 the air, ground, and water stewardship, for lack of a
2 better word.

3 Q. Had you had any responsibilities for
4 environmental matters before 1990?

5 A. Environmental Department reported to me prior
6 to that time, but I think it was only about a year
7 before, I would say. 1989 approximately.

8 Q. And as of 1989, the environmental staff
9 associated with the Y-12 facility were reporting to you;
10 is that correct?

11 A. Yes.

12 Q. And could you give me your best estimate of the
13 last year you had any responsibility for the Y-12
14 facility.

15 A. I think it was in 1993.

16 Q. And what happened at that time?

17 A. I am a little hazy on the facts because Y-12
18 was transferred between divisions and there was a
19 purchase and a sale in there. And I don't remember -- I
20 would have to look at something to try to refresh my
21 memory on that point.

22 Q. Okay. We will be looking at some documents
23 with your name on it, that may help. But what I am
24 trying to understand is what event do you associate with
25 the end of your responsibilities for Y-12? Was it the

1 sale of the property or closure or what?

2 A. Whatever that transaction was that took the
3 building out of the division into either another
4 division or another owner was the end of my
5 responsibility.

6 Q. Okay. Did you ever have any responsibilities
7 for the 53 acre property, the ESD facility?

8 A. Yes, I did.

9 Q. Did your responsibility for that Anaheim
10 facility overlap with Y-12 or were they separate periods
11 of time?

12 A. It overlapped.

13 MR. MILLER: So the record is clear, let me
14 show you a schematic drawing of the Y-12 facility.

15 (Plaintiff's Exhibit 2 marked
16 for identification)

17 MR. MILLER: Q. Do you recognize Exhibit 2 as
18 a schematic showing the layout of buildings associated
19 with the Y-12 facility?

20 A. Is this what's denoted by this dotted line? Is
21 that what you think is Y-12?

22 Q. The Y-12 building itself is a rectangular
23 structure on the right-hand portion of the drawing, the
24 way I have it turned, which is right-side up --

25 A. Yes. Mm-hmm.

1 Q. And that's the building itself that you were
2 responsible for, correct?

3 MR. SMITH: Object as lack of foundation as to
4 time. He can answer.

5 THE WITNESS: I was responsible for the area
6 within the dotted line that you have shown here.

7 MR. MILLER: Q. Okay. So it is a larger
8 property than the Y-12 building itself; is that correct?

9 A. That is correct.

10 Q. And next to the Y-12 building on the left-hand
11 side of the drawing is something labeled EMPI building
12 addition. What was that?

13 A. Which one are you -- can you point to it?

14 Q. Yes.

15 A. That one? No, I can't recall.

16 MR. MILLER: Okay. And let me show you a site
17 for what we are calling the EMD facility, but it has
18 also been known as the ESD facility, just to confuse
19 everybody.

20 (Plaintiff's Exhibit 3 marked
21 for identification)

22 MR. MILLER: Q. It is the 53 acre property
23 which has several buildings.

24 Within the bold line are a series of buildings
25 labeled with Y, and down at the bottom an area labeled

1 "Freeway Property."

2 Do you recognize this drawing?

3 A. Yes.

4 Q. And what would you call this facility?

5 A. This was the Electro Mechanical division at the
6 time that I came into the picture.

7 Q. And did you have responsibility, as manager of
8 facilities, for that set of buildings by 1989?

9 A. I am not sure of that date but it is
10 either -- it is either 1989 or 1990, in that time frame.

11 Q. Okay. And did your responsibilities for the
12 EMD facility end in approximately 1993?

13 A. I think so, yes.

14 Q. Is it your best recollection that the buildings
15 shown on this diagram labeled with a Y were ones that
16 you were manager of facilities for during the time
17 period we have been discussing, which includes Y-1? It
18 is going to go from the top down, Y-2, Y-8, 9, 11, 4, 7,
19 16, and 3?

20 A. Yes, everything in the bold line.

21 Q. Who did you report to as manager of facilities?

22 A. John Simpson.

23 Q. And who did you report to on environmental
24 issues?

25 A. It was still the same person. Yes. That was

1 my direct reporting line.

2 Q. There was a group known as corporate
3 environmental, correct?

4 A. Yes.

5 Q. How did you interface with them? Could you
6 explain that to us, please.

7 A. From their point of view, they provided
8 oversight in the operation of the Environmental
9 Department.

10 Q. Were they the ones making decisions or was it
11 done in some other way?

12 MR. SMITH: Objection; vague and ambiguous;
13 lacks foundation. You can answer.

14 MR. MILLER: Q. Can you answer? If not, I
15 will try and ask a better question.

16 A. I can't answer that.

17 Q. Okay.

18 A. It is not specific.

19 Q. Let's say that you were trying to decide how to
20 select an environmental consulting firm. Would you make
21 that decision or would somebody at corporate? How did
22 that work?

23 MR. SMITH: Objection. Calls for a
24 hypothetical; lacks foundation. But you can respond if
25 you can.

1 it. I don't quite understand, when we walked off the
2 site on May 31st, everything was clean as evidenced by
3 AWD, AMD, whatever it is.

4 Q. Were concentrations that high present in the
5 past, before that work was done?

6 A. I don't know. You showed me a report from
7 1984, so I assume that that report refers to something
8 in that area. It is Exhibit 7. But I have no specific
9 knowledge it was higher in the past. All I know is we
10 cleaned it up.

11 Q. Was your ability to clean up the site affected
12 by the deadline of the end of May 1991 at all?

13 A. Yes.

14 Q. Explain.

15 A. Originally we started with the anodic room, was
16 probably the worst site. We started with vapor
17 extraction and we went to enhanced vapor extraction.
18 And we went to using DC voltages across -- it became
19 apparent to us that the extraction method would not
20 be -- allow us to be finished by May 31st. So what we
21 did was we went off the budget and we spent whatever it
22 took to clean up that site, which was excavation.

23 Q. How far down did you go by excavation?

24 A. It was something like 50, 60 feet.

25 Q. Was it confirmed there was no contamination

1 know.

2 Q. Well, if you had liquid containing solvents in
3 a drum and you crush it, isn't that a potential release
4 area?

5 MR. SMITH: Objection; calling for speculation;
6 it is an incomplete hypothetical.

7 THE WITNESS: It really is hypothetical. I
8 wouldn't know.

9 MR. MILLER: Q. Turn to the next paragraph.
10 On page 6 of 6 it says, "Due to the time restraints of
11 this project, investigation of the adjacent properties
12 could not be performed."

13 Do you see the statement?

14 A. Yes, I see the statement.

15 Q. Were you at all involved in the Y-12 project at
16 the time that comment was made?

17 A. No, I was not.

18 Q. Do you know anything about the time constraints
19 for that project?

20 A. No. And as I said earlier, this building was
21 being transferred back and forth, and I don't know if it
22 was sold or just transferred to another division. So I
23 don't know what he's talking about here. I have -- I
24 don't have any background on this.

25 Q. I want to question you about the cover sheet

1 for Exhibit 15. It has got the word "Private" written
2 all over it.

3 Do you -- can you explain at all the
4 circumstances under which such a cover sheet would be
5 put on a document?

6 A. I think I can talk to this document. It is
7 simply something that says this is company private. We
8 want you to read it, find out what the facts are, then
9 go deal with the facts. And I think in this case the
10 "Private" is on there so that it doesn't get out and get
11 misconstrued, and people create rumors and so on.
12 That's the only purpose that I can see.

13 I have one other statement: Northrop's policy
14 is if anybody sees any contamination, we either dealt
15 with it -- dealt with it and revealed it to the world.

16 So this doesn't standby itself. If there was a next
17 step, and there was an agency involved, and I thought
18 Water Quality Board was involved when it was our little
19 part of it. Ken and I worked on it.

20 Q. Let's evaluate that for a moment. I want to
21 ask you questions about both sites at the same time to
22 save time.

23 So we are going to ask questions about Y-12 and
24 the 53 acre property collectively. Did you ever learn
25 from any source that there were floor drains in any of

1 those buildings where solvents were spilled on the floor
2 and made their way to floor drains?

3 A. I didn't hear that about Y-12. I did hear that
4 about Y-1 or -- is it 1 or 2? Y-1.

5 Q. Were you ever in a position where you
6 recommended disconnecting the floor drain or filling it
7 or closing it?

8 A. No, it didn't fit into the scheme of things.
9 We were -- moved the division out, we tore down the
10 buildings, got rid of hazardous materials, as hazardous
11 materials. We recycled everything else, asphalt,
12 concrete, windows and so on. I had no need to
13 disconnect anything because we were going to deal with
14 it as a stand-alone -- hazardous material, if that's
15 what it was.

16 Q. Let me show you a document and get your
17 comments.

18 MR. SMITH: Let us know when a good time for
19 the afternoon break would be.

20 MR. MILLER: It would be after we finish with
21 this document.

22 MR. SMITH: Okay.

23 MR. MILLER: It won't take long.

24 (Plaintiff's Exhibit 16 marked
25 for identification)

1 A. Okay. Where are you now?

2 Q. "Mr. Peltier provided me with information
3 relative to those wells contaminated with volatile
4 organic chemicals. He indicated that there were 13
5 wells within one mile of Northrop contaminated with
6 trichloroethylene (TCE), perchloroethylene (PCE),
7 chloroform, and trichloroethane (TCA)."

8 Do you see the list?

9 A. Yes.

10 Q. Were you ever told by Mr. Erwin or anyone else
11 that the state was asking information from Northrop
12 because 13 wells within a mile of Northrop's facility
13 were contaminated with the solvents I mentioned?

14 A. No, I was not.

15 Q. Do you know of anything Northrop did in or
16 shortly after May 1987 to find out if they were the
17 source of the solvents found in those wells or some of
18 them?

19 MR. SMITH: Objection; lack of foundation.

20 THE WITNESS: No, I was not aware.

21 MR. MILLER: Q. Do you know of any program
22 that was commenced about that time to find out the
23 source of releases to the environment, if any, at the
24 Northrop facilities of VOC's?

25 MR. SMITH: Objection; lacks foundation.

1 THE WITNESS: I'm not aware of it, but that
2 doesn't mean anything because company policy dictates
3 that we take care of things as we find them.

4 MR. MILLER: Q. In the last paragraph before
5 the list of addresses, it says, "We have established a
6 system of recording chemical spills at this division."

7 Do you see that?

8 A. Yes.

9 Q. Were you familiar with that system?

10 A. No.

11 Q. Did you ever look at the list of spills?

12 A. No, I did not.

13 Q. Let's take a look at the next page. If you
14 look at the second item, it reports "100 gallons of
15 trichloroethane was accidentally released into the
16 secondary spill containment pit at 500 East Orangethorpe
17 Avenue, below a degreaser."

18 A. I see that, yes.

19 Q. And that's the same spill containment pit we
20 talked about earlier with the problems with the
21 concrete? Is that how you read that?

22 A. No, I wouldn't equate the two. The spill
23 containment pit that was described in the study, the one
24 that you could put a screwdriver through the wall, is
25 not going to hold 100 gallons of trichloroethylene, so I

1 MR. MILLER: Q. Why was this document marked
2 "Northrop Private"?

3 A. I think, as I explained before, it is a desire
4 to keep the material close to the vest until we are
5 ready to come up with a solution. And this is not
6 conclusive yet.

7 Q. To your knowledge, did anyone, prior to the
8 date of this document, May 2nd, 1994, notify the
9 Regional Board there had been environmental releases
10 that required remediation, or would likely require
11 remediation?

12 MR. SMITH: That's two different questions.
13 That's compound.

14 MR. MILLER: I will break it down.

15 Q. To your knowledge, did anyone notify the
16 Regional Board or any other state regulatory agency,
17 prior to May 2nd, 1994, that there were conditions at
18 the Y-12 property that were likely to require
19 remediation?

20 MR. SMITH: Compound. Lacks foundation. You
21 can answer it.

22 THE WITNESS: Just, the only knowledge I have
23 is the Exhibit 15 that you gave me, which indicates the
24 seriousness of the manufacturing processes. Once again,
25 I think that the Exhibit 18 refers to the same

1 situation. I think they are linked.

2 MR. MILLER: Q. They are several years apart
3 in time. One is in the '80s, the other is '94.

4 A. Well, they are both in the '90's, '92 and '94.

5 Q. I am sorry. I don't have the date of the other
6 one in front of me. Thank you.

7 Did you ever sign a report to the Regional
8 Board notifying them of a spill or release of chemicals?

9 A. No, Ken -- that was normally Ken's activity.
10 But I would have been notified.

11 Q. Did you ever sign any type of notice to the
12 County Sanitation District of Orange County concerning
13 discharges to a sewer?

14 A. It might be possible. It was the policy that
15 if we spilled anything, we notified the agency. And I
16 am thinking of when I was at the Electronics Division.
17 We had to get rid of some 30, 40,000 gallons of cooling
18 water that had an anti-rust component. We notified them
19 and then we had it all trucked away. So I would bet
20 that somebody was notified in the agency.

21 Q. Who was responsible for giving any required
22 notice?

23 A. The environmental person.

24 Q. Who was that?

25 A. Ken Erwin.

EXHIBIT 22

RCVD 3/5/1997

**SUMMARY OF SITE INVESTIGATIONS
Y-12 FACILITY
301 EAST ORANGETHORPE AVENUE
ANAHEIM, CALIFORNIA
NORTHROP GRUMMAN CORPORATION**

EXECUTIVE SUMMARY

Smith Environmental Technologies Corporation prepared this Summary Site Investigations Report to detail environmental investigation and remediation activities at the former Northrop Grumman Corporation Military Aircraft Division Y-12 facility. The Y-12 facility is located at 310 East Orangethorpe Avenue in Anaheim, California. The facility was primarily utilized for the manufacture of aluminum alloy floor beams for Boeing 747 aircraft. Manufacturing operations ceased in 1994. Manufacturing operations included machining, forming, chemical treatment, assembly, and painting.

During the past year, the site has been investigated for environmental issues, and five areas identified with chemical concentrations of concern were remediated by excavation and proper disposal. No other areas are recommended for remediation. The site is being impacted by an upgradient regional contaminant groundwater plume identified by the Orange County Water District (OCWD). Regional groundwater data suggests that the Northrop Y-12 facility is not contributing any significant chemicals to this regional plume.

A total of 43 soil borings were drilled and sampled, and two surface background samples were collected at the site in the period from July 1994 to October 1994. Excavation and removal of soils containing elevated levels of petroleum hydrocarbons was conducted at the site in August 1994, based on the results of the data generated by soil boring activities.

The subsurface soils in the vicinity of the borings consist mainly of silty clays and medium sands to a depth of approximately 60 feet below ground surface (bgs). Two

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clay zones were encountered in the zone from 60 to 90 feet bgs. Groundwater was first encountered beneath the site at approximately 90 feet bgs.

Laboratory analytical results of the soil samples generated during drilling activities indicated the presence of the following compounds in the subsurface soils at the site:

- 1,2-Dichlorobenzene
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- 1,1-Dichloroethene
- Tetrachloroethene
- Toluene
- Petroleum hydrocarbons
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethene (TCE)
- Xylenes

These chemical concentrations decrease with depth and do not pose a significant threat to groundwater. The laboratory analytical results also indicated the minor presence of the following metals in the subsurface soils at the site:

- | | |
|-------------|--------------|
| • Arsenic | • Lead |
| • Barium | • Mercury |
| • Beryllium | • Molybdenum |
| • Cadmium | • Nickel |
| • Chromium | • Thallium |
| • Cobalt | • Vanadium |
| • Copper | • Zinc |

Metals detected and remaining in the soils are below regulatory levels and preliminary regulatory goals.

Smith Environmental conducted fate and transport analyses of the compounds encountered in the subsurface soils, based on three models. Soil concentrations in the upper 10 feet of the subsurface were compared to published United States Environmental Protection Agency (U.S. EPA) Primary Remediation Goals (PRGs) and published total threshold limit concentrations (TTLC) limits. Soil concentrations in the region from 10 feet bgs to groundwater were compared to calculated attenuation factors based on a model devised by the California Regional Water Quality Control Board (RWQCB).

None of the volatile organic compound (VOC) concentrations reported in the upper 10 feet of soil were found to exceed published U.S. EPA PRGs. None of the metals encountered at the site exceeded TTLC limits. Of the chemical compounds encountered in the soils deeper than 10 feet bgs, only 1,2-dichloroethane and TCE exceeded soil screening levels calculated using the California RWQCB method for remediation of VOC impacted sites. The presence of a concrete or asphalt cap over the affected soils eliminates infiltration and the regional groundwater issues negate the consideration for additional actions on the site.

Smith Environmental reviewed regional groundwater data provided by the California RWQCB and the OCWD to determine the regional groundwater gradient and ascertain the extent of a regional hydrocarbon or volatile organic plume. The OCWD data indicated that the regional groundwater gradient in the vicinity of the site is westerly to south-westerly.

Based on the data provided by the OCWD, groundwater containing VOCs, including TCE, has been encountered in the region encompassing the site. The highest concentrations of TCE are encountered upgradient of the site, with concentrations decreasing downgradient. Monitoring well data provided by the OCWD for nearby wells located

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up-gradient and down-gradient of the site indicates that TCE concentrations in groundwater decrease across the site.

Based on published U.S. EPA PRGs, published TTLC values, calculation of soil screening criteria using a California RWQCB model, and examination of the upgradient TCE plume that has migrated onto the Y-12 facility, Smith Environmental recommends no further action be required as it relates to investigation or remediation of soils and groundwater at the site.

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SUMMARY OF SITE INVESTIGATIONS
Y-12 FACILITY
301 EAST ORANGETHORPE AVENUE
ANAHEIM, CALIFORNIA
NORTHROP GRUMMAN CORPORATION

1.0 INTRODUCTION

Smith Environmental Technologies Corporation has been contracted by Northrop Grumman Corporation (Northrop) to prepare this Summary Site Investigations Report for the Northrop Military Aircraft Division Y-12 facility. The Y-12 facility is located at 310 East Orangethorpe Avenue in Anaheim, California (Figure 1).

1.1 Site Background

Historical photographs were used to determine prior land use in the immediate vicinity of the Y-12 facility. Photographs reviewed for the years 1921 to 1942 indicated that the area was used for agricultural crop cultivation. The 1947 photograph indicated that during the period from 1942 to 1947, the crops were replaced with orchard groves. Residential development of the area was first evidenced in the 1951 photograph. The 1958 photograph indicated that the areas southeast and southwest of the facility had been developed into commercial or industrial properties.

The Y-12 facility property was leased by Northrop in 1962, at which time the property was still in agricultural use. In 1962, Northrop constructed the Y-12 Building. The property parcel was purchased by Northrop in 1992. The facility was primarily utilized for the manufacture of floor beams for Boeing 747 aircraft.

Manufacturing operations at the facility included machining, forming, chemical treatment, assembly, and painting. Manufacturing operations ceased in 1994.

1.2 Site Layout

The Y-12 facility is rectangular in shape with approximate dimensions of 1,200 feet by 350 feet. Located on the property is one significant building—a single-story structure, approximately 500 feet long by 200 feet wide. Adjacent to the building are paved areas to the east and west, a storage yard to the north, a hazardous materials and hazardous waste accumulation area within the storage yard, and a recreational vehicle (RV) parking area to the north of the storage yard.

The Y-12 building is roughly divided into five major areas: the main assembly area, the quench tank and oven, the annex, the machinery area, and offices. Adjoining the building to the west is a 1,1,1-trichloroethane (1,1,1-TCA) tank, a compressor, and a waste treatment area, including a clarifier, a waste water treatment system, and a sludge press. The physical site layout is shown on Figures 2 and 3.

The main assembly area included the vapor degreaser, paint booths and oven, surface preparation area, dye penetrant station, laboratory, and debur area. The vapor degreaser was used to remove oils and grease from parts. Prior to 1980, trichloroethene (TCE) was used as a solvent. The paint booth uses a dry, electrostatic process. Paint and solvents were used in this paint booth. The surface treatment process imparted corrosion resistance to the materials. The process encompassed the alodine station and the "carwash" tank line and utilized alkaline cleaners, deoxidizers, alodine, and rinse water. The laboratory provided analytical support for the manufacturing process. Miscellaneous chemicals were utilized in small amounts in the laboratory. The debur area was used to finish machined parts and generated waste water that could contain oils and greases.

The quench tank and oven were used for metallurgic treatment of the aircraft parts using a solution containing polyethylene glycol. The machinery area housed metal working machines. The machines used hydraulic fluids, lubricating oils, and coolant.

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The 1,1,1-TCA tank was an above-ground, elevated storage tank located in a concrete bermed area with a sump. The chemical was used in the vapor degreaser. A compressor, an air-conditioning unit, and an electrical substation were located outside the west wall of the building. Lubricating oils and greases were used for the air compressor.

The waste water pre-treatment plant was adjacent to the three-stage clarifier used to remove oil, grease, and sludge from waste waters. The pre-treatment system itself was used to treat waste waters low in pH or containing heavy metals. The process utilized sodium metabisulfite, caustic and acid solutions, and polymer. Sludge generated in this area was processed in the sludge press.

Within the hazardous waste and material accumulation area were storage facilities for waste products, such as solvents, used oils and grease, acids, and machinery parts. Wastes were segregated and disposed in accordance with applicable regulations.

2.0 REGIONAL GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

2.1 Regional Geologic Conditions

The Y-12 facility is located in the city of Anaheim, in the center of the Orange County Coastal Plain, bounded by the Puente Hills to the north, the Los Angeles County line to the northwest, the Santa Ana Mountains to the east, the San Joaquin Hills to the south, and the Pacific Ocean to the west. The topography of the region in the vicinity of the site is relatively flat, with a slight slope to the west of less than 20 feet per mile. The ground surface in the vicinity of the Y-12 building is approximately 160 feet above mean sea level (msl).

The Orange County Coastal Plain is underlain by a thick sequence of marine and continental materials. Rapid deposition rates and erosion rates, coupled with folding and local faults, have produced marked lateral variations in the thickness and types of sediments in the basin. In general, the basin is underlain with a basement complex of quartz diorite, granodiorite, and metasediments overlain by the Tertiary Pico Formation, the Pliocene Upper Fernando Group, the Lower Pleistocene San Pedro Formation, the Lower Pleistocene Coyote Hills Formation, and the Upper Pleistocene Lakewood Formation. This stratigraphy is capped by Upper Pleistocene stream terrace deposits, older alluvium, and, finally, by recent alluvium deposits.

The recent alluvium deposits in the vicinity of the Y-12 facility consist of fine to medium sand, silty sand, silt, and silty clay. Some discontinuous sand and gravel lenses are expected to be encountered in the shallow subsurface.

2.2 Regional Hydrogeologic Conditions and Water Quality

The site is located in the northeastern region of the Main Orange County Groundwater Basin. Regional data suggests that the uppermost regional aquifer beneath the site is the Talbert Aquifer. The depth-to-groundwater beneath the Y-12 facility is approximately 90 to 100 feet below surface grade.

The regional water is contaminated with VOCs and hydrocarbons. Upgradient of the Y-12 facility, concentrations of VOCs exceed 165 parts per billion (ppb) and downgradient of the Y-12 facility, concentrations of VOCs are less than 20 ppb (Figure 4). This suggests that upgradient sources have significantly impacted the regional water quality. No groundwater information is available for the Y-12 facility, however, regional data suggests that the Y-12 facility is not contributing to the regional groundwater problem.

Fullerton Creek flows along the northern site boundary in a westerly direction. Carbon Canyon Creek is located approximately 0.85 miles southeast of the facility and flows in a westerly direction. Both creeks are tributaries of the San Gabriel River.

3.0 SITE ACTIVITIES

A total of 43 soil borings have been drilled and sampled, and two surface samples collected at the site from July through October 1994. The drilling was divided into seven phases:

- Fourteen soil borings (NC-2A through F, NC-6, NC-8, NC-11A and NC-11B, NC-12, NC-21, NC-22A, and NC-22B) were installed inside the Y-12 facility Building during July 1994.
- Twenty soil borings (NC-OAA, NC-OAB, NC-OAC, NC-OBA, NC-OB, NA-OCA, NC-OCB, NC-OCC, NC-OEA, NC-OEB, NC-OEC, NC-1, NC-13A through NC-13D, NC-15, NC-16, NC-17, and NC-23) were installed on the Y-12 facility grounds during July 1994.
- Two surface samples (NC-OFA and NC-OFB) were collected on the Y-12 facility grounds during July 1994.
- Two soil borings (RV-1 and RV-2) were installed on the Y-12 facility grounds in August 1994.
- Three soil borings (NC-2G, NC-2H, and NC-2I) were installed inside the Y-12 facility Building during September 1994.
- One soil boring (CB-1-Q) was installed on the Y-12 facility grounds during September 1994.
- One soil boring (CB-1) was installed inside the Y-12 facility Building during October 1994.

The locations of the soil borings are shown on Figures 2 and 3.

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Borings were installed using either hand-auguring equipment or power-operated drill rigs. Each of the borings were logged according to Unified Soil Classification System (USCS) or American Society of Testing and Materials (ASTM) standards. Details of the soil types encountered, sampling intervals, and completion depths are presented in the boring logs in Appendix A.

Soil samples collected from each of the borings were stored in brass sleeves with Teflon™ end-caps, labeled, placed in a cooled vessel, and transported to a state-certified environmental laboratory for analysis under Chain of Custody protocol. Details of the analytical methods used for each of the boring locations and sample depths are presented in the sections below. Copies of the official Chain of Custody reports are included in Appendix B. The soil borings were subsequently backfilled with bentonite and/or bentonite-cement slurry, and the soil cuttings were temporarily stored on-site in drums or roll-off bins, pending classification and proper off-site disposal.

The soil samples were analyzed for a variety of compounds, depending on the location of the boring and the previous use of the area. U.S. EPA analytical methods used for analysis of the samples collected at the site and the compound types that the methods detect are listed below:

- U.S. EPA Method 6010: Title 22 metals (metals)
- U.S. EPA Method 8015: Total recoverable petroleum hydrocarbons (TRPH)
- U.S. EPA Method 8020: Aromatic VOCs (aromatic VOCs)
- U.S. EPA Method 8240: VOCs
- U.S. EPA Method 8260: VOCs
- U.S. EPA Method 8270: Semi-volatile organic compounds (semi-volatiles)
- U.S. EPA Method 7196: Chromium VI (metals)
- U.S. EPA Method 7471: Mercury (metals)

In addition to the soil borings, Smith Environmental performed excavations and removals of soil at five locations at the Y-12 facility in August 1994.

3.1 Drilling: July 1994

3.1.1 Y-12 Facility Building

Fourteen soil borings were advanced at locations inside the Y-12 facility Building during July 1994. Two soil slant borings, NC-6 and NC-11A, were installed at a 30° angle from vertical. The remaining 12 borings were advanced vertically.

Borings NC-2A through NC-2F were installed to evaluate soils in the vicinity of the vapor degreaser. Boring NC-6 was installed to evaluate soils in the vicinity of the electrostatic paint booth. Boring NC-8 was installed to characterize soil conditions near the surface preparation and anodine station. Borings NC-11A and NC-11B were installed to evaluate soil conditions near the dye penetrant station. Boring NC-12 was installed to characterize soil conditions at the "carwash" tank line. Boring NC-21 was installed to evaluate soils in the vicinity of the debur area. Borings NC-22A and NC-22B were installed to characterize soil conditions in the machinery area.

Borings NC-2A through NC-2F were installed to depths of approximately 40 feet bgs and were sampled at approximate 5-foot intervals. The samples were analyzed for VOCs. Boring NC-6 was completed to a depth of approximately 12 feet bgs and sampled at the 1-, 5-, and 12-foot intervals. Samples collected from Boring NC-6 were analyzed for VOCs. Boring NC-8 was hand-augered to depth of approximately 10 feet bgs. The 1-foot and 5-foot samples were analyzed for metals.

Soil borings NC-11A and NC-11B were installed to approximately 13 feet bgs. The 1-foot and 5-foot sample from each boring was analyzed for metals. Boring NC-12 was hand-augered to approximately 10 feet bgs and sampled at 5 foot intervals. The 1-foot and 5-foot samples were analyzed for metals. Boring NC-21 was installed to approximately 11 feet bgs and sampled at approximate 5-foot intervals. The 1-foot and 5-foot samples were analyzed for TRPH. Borings NC-22A and NC-22B were both

installed to approximate depths of 11 feet bgs and sampled at 5-foot intervals. The 1-foot and 5-foot samples from each boring were analyzed for TRPH.

3.1.2 Y-12 Facility Grounds

Twenty soil borings were advanced at locations on the Y-12 facility grounds during July 1994. Boring NC-1 was installed to characterize the soil around the quench tank. Borings NC-13A through 13D were installed to evaluate soil conditions underneath the waste water pre-treatment system. Boring NC-15 was installed near the compressor. Boring NC-16 was installed to evaluate subsurface conditions near the sump in the sludge press area. Boring NC-17 was installed to evaluate the soil in the area of the TCE tank. Boring NC-23 was installed to characterize the soil in the vicinity of the clarifier. Borings NC-OAA, NC-OAB, NC-OAC, NC-OBA, NC-OB, NC-OCA, NC-OCB, and NC-OCC were installed to evaluate soil conditions in the vicinity of the hazardous materials accumulation area. Borings NC-OEA, NC-OEB, and NC-OEC were installed to characterize soil conditions along the facility fence line.

Boring NC-1 was advanced to approximately 15 feet bgs and sampled at approximate 5-foot intervals. The 1-, 5-, 10-, and 15-foot soil samples were analyzed for VOCs. The 1-foot and 5-foot samples were also analyzed for metals. Borings NC-13A through NC-13D were hand-augered to approximately 10 feet bgs and sampled at approximate 5-foot intervals. The 1-foot and 5-foot sample from each boring was analyzed for metals. Boring NC-15 was installed to approximately 10 feet bgs and sampled at approximate 5-foot intervals. The 1-, 5-, and 10-foot samples were all analyzed for TRPH. The ten-foot sample was also analyzed for VOCs.

Soil Boring NC-16 was completed to approximately 10 feet bgs and sampled at approximate 5-foot intervals. The 1-, 5-, and 10-foot samples were all analyzed for metals. Boring NC-17 was hand-augered to approximately 10 feet bgs and sampled at 5-foot intervals. The 1-foot and 5-foot samples from Boring NC-17 were analyzed for VOCs. The 10-foot sample was analyzed for aromatic VOCs. Boring NC-23 was hand-

augered to approximately 10 feet and sampled at approximate 5-foot intervals. The 1-foot and 5-foot samples were analyzed for metals.

Soil Borings NC-OAA and NC-OAB were advanced to approximately 11 feet bgs and sampled at approximate 5-foot intervals. Boring NC-OAC was hand-augered to approximately 10 feet bgs. The 1-, 5-, and 10-foot sample from each of the borings were analyzed for VOCs. The 1-foot and 5-foot samples were also analyzed for TRPH and metals. Borings NC-OBA and NC-OBG were advanced to approximately 10 feet bgs and sampled at 5-foot intervals. The 1-, 5-, and 10-foot sample from each boring was analyzed for VOCs. The 1-foot and 5-foot samples were also analyzed for TRPH.

Soil borings NC-OCA, NC-OCB, and NC-OCC were hand-augered to approximately 11 feet bgs and sampled at approximate 5-foot intervals. The 1-, 5-, and 10-foot samples were analyzed for VOCs. The 1-foot and 5-foot samples from each boring were also analyzed for TRPH and metals. Borings NC-OEA, NC-OEB, and NC-OEC were advanced to approximately 10 feet bgs and sampled at approximate 5-foot intervals. The 1-, 5-, and 10-foot samples from each boring were analyzed for VOCs. The 1-foot and 5-foot samples were also analyzed for TRPH, metals, and semi-volatiles.

3.1.3 Background Sampling

Surface samples NC-OFA and NC-OFB were collected to determine background soil conditions. The samples were collected near the eastern fence line at approximately 1 foot bgs. The two samples were analyzed for metals.

3.2 Drilling: August 1994

Three soil borings were installed on the facility grounds in August 1994. Soil Boring CB-1-Q was installed to further evaluate soil conditions in the vicinity of the quench tank. Borings RV-1 and RV-2 were installed to characterize soil conditions in the RV parking area of the site.

Boring CB-1-Q was completed to a depth of approximately 40 feet bgs and sampled at approximate 5-foot intervals. The samples were analyzed for VOCs. Borings RV-1 and RV-2 were completed to approximately 10 feet bgs and sampled at approximate 5-foot intervals. The 1-, 5-, and 1--foot samples were analyzed for aromatic VOCs and for TRPH.

3.3 Drilling: September 1994

During September 1994, three additional soil borings (NC-2G, NC-2H, and NC-2I) were installed at the site to further characterize subsurface conditions in the vicinity of the vapor degreaser. Boring NC-2G was advanced to a depth of approximately 60 feet bgs. Borings NC-2H and NC-2I were advanced to a depth of approximately 40 feet bgs. Soil samples were collected at approximate 5-foot intervals from all three borings and were analyzed for VOCs.

3.4 Drilling: October 1994

One deep boring (CB-1) was installed at the site to further characterize soil conditions beneath the vapor degreaser in October 1994. The boring was installed to approximately 86.5 feet below the floor of the degreaser pit, 91.5 feet below the building grade. Groundwater was encountered at approximately 90 feet bgs.

Soil samples were collected at approximate 5-foot intervals and analyzed for VOCs. Samples were labeled at the time of sampling with the depth below the floor of the degreaser pit, not depth bgs. Subsequent references to these samples in this document will be in depth bgs. The soil samples were analyzed for VOCs.

3.5 Soil Excavation

During August 1994, Smith Environmental performed minor excavations at the following five locations on the Y-12 facility grounds to remediate hydrocarbon-impacted soil: NC-15, NC-OAA, NC-OAB, NC OAC, and NC-OEA.

The excavations consisted of approximate 5-foot by 5-foot areas. The areas encompassing Borings NC-OAC and NC-OEA were excavated to approximately 7 feet bgs. The area encompassing Boring NC-15 was excavated to approximately 3 feet bgs. The areas encompassing Boring NC-OAA and NC-OAB were excavated to approximate depths of 2-1/2 bgs. Floor and side-wall samples were collected from random locations within each of the excavations. The floor samples were collected at 6 inches to 1 foot below the excavation floor, and the side wall samples were collected from at least 6 inches into the side walls. The excavation locations and sample locations are shown on Figure 5.

Soil samples were stored in 8-ounce jars, labeled, and transported in a chilled vessel under Chain of Custody protocol to a state-certified environmental laboratory. The samples were analyzed for TRPH. Copies of the official Chain of Custody sheets are included in Appendix B. Subsequent to sampling, the excavations were backfilled with pea-gravel and capped with asphalt to match existing grade and cover.

4.0 SUBSURFACE INVESTIGATION RESULTS

4.1 Site Geological and Hydrogeological Conditions

4.1.1 Site Geologic Conditions

Based on boring logs developed during drilling activities at the site, the subsurface soils consist mainly of silty clays and medium sands to a depth of approximately 60 feet bgs. A 15- to 20-foot-thick red-brown to medium-grey, clayey silt zone was encountered in Soil Boring CB-1 at approximately 60 feet bgs. This zone transitioned to brown, clayey silt/silty clay zone extending to 91.5 feet bgs, the boring completion depth. This zone is expected to overlay a well-graded, sandy gravel to gravelly sand region.

Descriptions of the soil types encountered during each boring are shown on the boring logs in Appendix A. Three cross-sections (A-A', B-B', and C-C'), developed from the descriptions of the boring stratifications, are shown on Figures 6, 7, and 8.

4.1.2 Site Hydrogeologic Conditions

Groundwater was encountered in Soil Boring CB-1 at an approximate depth of 90 feet bgs. No groundwater was encountered in any other boring at the facility. No groundwater quality data is available for the Y-12 facility. However, based on information provided by the OCWD, upgradient sources responsible for degrading the regional aquifer have apparently degraded the groundwater beneath the Y-12 site and other properties downgradient of the Y-12 facility.

4.2 Soil Analytical Results

4.2.1 Chemicals of Concern

During drilling activities at the site, petroleum hydrocarbons consistent with diesel and heavier oils and fuels were encountered in the subsurface soils. Additionally, the following VOCs were encountered in detectable quantities in the subsurface soils:

- 1,2-Dichlorobenzene (1,2-DCB)
- 1,1-Dichloroethane (1,1-DCA)
- 1,2-Dichloroethane (1,2-DCA)
- 1,1-Dichloroethene (1,1-DCE)
- Tetrachloroethene (PCE)
- Toluene
- 1,1,1-Trichloroethane (1,1,1-TCA)
- 1,1,2-Trichloroethane (1,1,2-TCA)
- TCE
- Xylene isomers

The results of the laboratory analyses for petroleum hydrocarbons and VOCs are presented on Table 1. In addition to the petroleum hydrocarbons and VOCs found in the soil, several metals were detected in the soil samples. The results of the laboratory analysis for metals are presented in Table 2. For hydrocarbon and metal analyses, the complete list of the compounds that were analyzed is shown on the official laboratory analytical data reports presented in Appendix B.

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4.2.2 Y-12 Facility

4.2.2.1 Hydrocarbon Investigation

Sample analytical results from the machinery and deburr areas indicated no TRPH in the soils at the sample locations.

4.2.2.2 Volatile Organic Compounds Investigation

VOC-impacted soils were encountered during drilling activities around the vapor degreaser and the electrostatic spray-paint booth. Soil analytical results for samples collected from borings in the vicinity of the vapor degreaser are shown on Figure 9. Soil analytical results from samples collected at other locations inside the Y-12 facility Building are shown on Figure 10.

In the vicinity of the vapor degreaser, detectable levels of 1,1-DCA and 1,2-DCA were detected in soil samples to 45 feet bgs. The maximum concentrations of these compounds were reported at 8.9 micrograms per kilogram ($\mu\text{g}/\text{kg}$) [herein designated as parts per billion (ppb)] and 24 ppb, respectively. The highest concentrations of 1,2-DCA in the upper 10 feet of the soil was reported at 21 ppb. None of the samples collected in the upper 10 feet of soil indicated the presence of 1,1-DCA. Neither of these compounds were detected in samples collected below 45 feet bgs.

Soil samples from Boring NC-2G at depths to 60 feet bgs were reported with detectable levels of 1,1-DCE and 1,1,1-TCA. No detectable levels of these compounds were encountered in the samples collected from Boring CB-1 ranging from 60 to 90 feet bgs. The maximum concentrations of 1,1-DCE encountered in any of the soil samples from beneath the vapor degreaser was 66 ppb, at a depth of 25 feet in Boring NC-2H with non-detectable concentrations for three consecutive samples to a depth of 40 feet. The maximum concentration of 1,1-DCE encountered in the upper 10 feet of the soil was 65 ppb at a depth of 6 feet in Boring NC-2H. The maximum reported level of 1,1,1-TCA

was 1,100 ppb at a depth of 25 feet in Boring NC-2H, while the maximum concentration encountered in the upper 10 feet was 1,000 ppb in soil Boring NC-2H.

PCE was only encountered in the 1-, 5-, and 10-foot bgs samples collected from Boring NC-2E at a maximum concentration of 2.6 ppb, and was not detected in the Boring NC-2E samples collected at 15 to 40 feet bgs, nor was it encountered in any other boring. Detectable levels of 1,1,2-TCA were encountered at a maximum depth of 25 feet in Boring NC-2B. The highest reported concentration of 1,1,2-TCA was 24 ppb at 10 feet bgs. The compound was not detected in the deeper samples collected at this locations or in deeper samples collected from Boring CB-1.

Detectable levels of TCE were encountered in the soil samples collected from Boring CB-1 to completion depth (90 feet bgs). The maximum reported level of TCE was 590 ppb at 60 feet bgs. The maximum concentration of TCE in the upper 10 feet of the soil beneath the vapor degreaser was reported at 230 ppb.

Detectable quantities of PCE, toluene, and TCE were encountered in the soils beneath the electrostatic paint booth. PCE and TCE were reported in the 1-foot bgs samples at 6.6 2.3 ppb and 3.1 5.3 ppb, respectively. Toluene and TCE were reported in the 12-foot sample at 2.3 ppb and 5.3 ppb, respectively. No hydrocarbons were encountered in the 5-foot sample.

4.2.2.3 Metals Investigation

Soil samples collected from the electrostatic paint booth, surface preparation and alodine station, "carwash" tank line, and the dye-penetration station were all analyzed for Title 22 metals using the toxic contaminant leaching procedure (TCLP) protocol. The results of the laboratory analysis for metals is presented in Table 2.

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In the vicinity of the electrostatic paint booth, surface preparation, and alodine area, barium, beryllium, cadmium, total chromium, cobalt, copper, lead nickel, vanadium, and zinc were encountered in detectable quantities. No arsenic, chromium VI, mercury, molybdenum or thallium were encountered in the one-foot or five foot samples from the electrostatic paint booth. No chromium VI, mercury, molybdenum, or thallium were encountered in the 1-foot or 5-foot sample from the surface preparation and alodine station.

In the vicinity of the dye-penetrant station and the "carwash" tank line, barium, cadmium, total chromium, cobalt, copper, lead, nickel, vanadium, and zinc were detected in the soil samples. No arsenic, beryllium, chromium VI, mercury, molybdenum, or thallium were encountered in the 1-foot or 5-foot samples collected from Borings NC-11A, NC-11B or NC-12.

4.2.3 Y-12 Facility Grounds

4.2.3.1 Hydrocarbon Investigation

TRPH was detected at a concentration of 1,900 milligrams per kilogram (mg/kg) [herein designated as parts per million (ppm)] in the 5-foot sample collected from Boring NC-15, augered near the compressor. No TRPH was detected in the 10-foot sample (laboratory reports indicate that this sample was analyzed outside of the method holding time). Soils in the vicinity of Boring NC-15 were subsequently excavated to approximately 3 feet below grade. A sample collected 1 foot below the bottom of the excavation was reported with nondetectable levels of TRPH.

In the hazardous materials accumulation area, soil samples were collected and analyzed to the boring completion depths of approximately 10 feet bgs. TRPH was encountered in the upper 1 to 5 feet of the soil at a maximum concentration of 2,100 ppm. Along

the facility fence line, TRPH was detected at maximum depth of 5 feet. The maximum concentration of TRPH encountered was 110 ppm.

Of the six soil samples collected in the RV parking area, only the 1-foot sample from Boring RV-1 evidenced detectable levels of TRPH, reported at 23 ppm. Neither the 5-foot nor the 1-foot samples from Boring RV-1 were reported with detectable levels for TRPH.

4.2.3.2 Volatile Organic Compounds Investigation

VOC impacted soils were encountered in the soil samples collected from beneath the quench tanks, compressor, TCA tank, hazardous materials accumulation area, RV parking area and along the property fence line. Soil analytical results for samples collected on the Y-12 facility grounds are presented on Figures 9 and 10.

In the vicinity of the quench tanks, PCE was reported in the 10-foot sample from Boring NC-1 at 3.6 ppb. Soil samples from Boring CB-1 at depths from 5 to 40 feet bgs indicated no PCE in the soil samples. TCE was encountered in Borings NC-1 and CB-1-Q to the boring completion depths. The maximum concentration of TCE encountered beneath the quench tank was 340 ppb at the 10-foot depth. No other hydrocarbon compounds were detected in the samples collected from the borings. No halogenated compounds were detected in the 10-foot sample collected from Boring NC-15, installed near the compressor.

In the vicinity of the TCA tank, PCE, 1,1,1 TCA, and TCE were encountered in the 1-foot Boring NC-17 sample at 2.7 ppb, 91 ppb, and 4.0 ppb, respectively. The 5-foot sample was reported to contain 9.0 ppb of 1,1,1 TCA and 2.7 ppb of 1,1,2 TCA. The maximum concentration of TCE encountered in the subsurface samples in the vicinity of the hazardous materials accumulation area was reported in the 5-foot sample from Boring NC-OAB, at 160 ppb.

Along the facility fence line, PCE and xylenes were detected at maximum depths of 5 feet. The 10-foot samples from the same locations indicated no detectable levels of PCE or xylenes. TCE was encountered at the 1-, 5-, and 10-foot sample intervals in Borings NC-OEA and NC-OEB. No TCE was encountered in Boring NC-OEC. The highest concentrations of PCE, TCE, and xylenes reported in the samples collected from along the fence line were 160 ppb, 48 ppb, and 2.3 ppb, respectively. Of the six soil samples collected from the RV parking area, only the 5-foot sample from boring RV-1 was reported with a detectable concentration of an aromatic VOC. The sample was reported to contain 8.1 ppb of 1,2-DCB.

4.2.3.3 *Metals Investigation*

Soil samples collected from the subsurface soils in the vicinity of the quench tank, waste water pretreatment system, sludge press, clarifier, hazardous materials accumulation area, and facility fence line were all analyzed for Title 22 metals using TCLP protocol. The background soil samples were also analyzed for Title 22 metals using TCLP protocol. The results of the laboratory analysis for metals is presented in Table 2.

In the vicinity of the quench tanks, barium, cadmium, total chromium, cobalt, copper, lead, nickel, vanadium, and zinc were encountered in detectable quantities in the soil samples. No arsenic, beryllium, chromium VI, mercury, molybdenum, or thallium were encountered in the subsurface soils in this area.

In the vicinity of the waste water pretreatment system and the sludge press, no arsenic, beryllium, chromium VI, mercury, molybdenum, or thallium were encountered in the subsurface soils.

In the vicinity of the clarifier, arsenic, barium, cadmium, total chromium, cobalt, copper, lead, nickel, vanadium, and zinc were encountered in detectable quantities in the 1-foot and 5-foot soil samples. Beryllium and thallium were encountered in detectable

quantities at 1-foot but were not detected in the 5-foot sample. Chromium VI, mercury, and molybdenum were not encountered in either the 1-foot or the 5-foot sample.

In the vicinity of the hazardous materials accumulation area, arsenic, barium, beryllium, cadmium, total chromium, cobalt, copper, lead, mercury, molybdenum, nickel, thallium, vanadium, and zinc were encountered in detectable quantities. Chromium VI was not detected in any of the soil samples from the area. Arsenic, beryllium, and thallium were only encountered in Boring NC-OAC, all other soil samples from the area were reported with no detectable concentrations of these compounds. Soils in the vicinity of Boring NC-OAC were subsequently excavated to approximately 7 feet below grade, removing the elevated concentration of these compounds. The only sample from the area with detectable levels of mercury was the 5-foot sample from Boring NC-OCB, reported at 0.39 mg/kg.

Along the facility fence line and in the surface samples, detectable levels of barium, cadmium, total chromium, cobalt, copper, lead, molybdenum, nickel, vanadium, and zinc were encountered in the soil samples. No arsenic, beryllium, chromium VI, mercury, or thallium were encountered in the subsurface and surface sample from these areas. Soils in the vicinity of Boring NC-OEA were subsequently excavated to approximately 7 feet below grade.

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5.0 FATE AND TRANSPORT STUDIES

The subsurface soils can effectively be reduced to two separate zones, the upper 10 feet of soil and the region from 10 feet bgs to groundwater. The pathways which chemicals in the upper 10 feet of the soil region are most likely to affect are those traditionally associated with strictly a soils investigation, namely ingestion, inhalation, and dermal contact. The chemicals in the soil region below 10 feet, were investigated as to how those chemicals may potentially impact groundwater beneath the site.

To model the two types of pathways and set preliminary soil screening levels, three different approaches to fate and transport modelling were used. A U.S. EPA method updated on a biannual basis was used to determine PRGs for the upper 10 feet of the soil as it relates to VOCs encountered at the site. For metals encountered at the site, both PRGs and total TTLCs were examined to determine remediation goals. For the soils below 10 feet, the Los Angeles Region of the California RWQCB interim guidance document for the remediation of VOC impacted soil was utilized.

5.1 Upper 10 Feet of Soil Region

U.S. EPA-published PRGs were used to develop a screening basis for remediation goals for the upper 10 feet of the subsurface soils at the site. The U.S. EPA updates the PRG values biannually as new screening methods for the compounds become available or as new information regarding the toxicity of the compounds are discovered. Soil PRGs are used to determine an initial exposure threshold that human beings, including sensitive receptors, could withstand over a lifetime of exposure. Soil PRGs take into account exposure pathways such as ingestion, inhalation, and dermal absorption.

The U.S. EPA PRGs are broken into four subgroups: cancer-causing compounds; noncancerous compounds; nonrisk-based PRGs based on soil saturation limits; and nonrisk-based maximum levels, generally utilized for less toxic inorganic and semi-volatile compounds. Table 3 lists the highest concentration of each chemical currently remaining at the site in the upper 10 feet of the soil. Also listed on Table 3 are the U.S. EPA-published PRGs for the same compounds and the subgroup classification.

Taken as individual compounds, none of the compounds encountered in the upper 10 feet of the soil exceed published PRG limits or published TTLC limits. Arsenic, reported at 1.8 mg/kg, is the only compound near its PRG value of 2.0 mg/kg. However, arsenic was not a component used in the manufacturing process at the facility and is likely due to natural occurrence or due to the degradation of early agricultural pesticides from the historic agricultural use of the site.

For multiple compounds, the U.S. EPA document provides two formulas for determining health risks associated with a site. A cancer risk (C_R) is calculated for cancer-causing compounds, and a hazard index (HI) is calculated for noncancerous compounds. Prior to applying these equations, the method removes nonrisk-based PRGs. C_R and HI are calculated as follows:

$$C_R = \left[\left(\frac{conc_x}{PRG_x} \right) + \left(\frac{conc_y}{PRG_y} \right) + \dots \right] \times 10^{-6}$$

$$HI = \left[\left(\frac{conc_x}{PRG_x} \right) + \left(\frac{conc_y}{PRG_y} \right) + \dots \right]$$

Where:

$conc_x$ = maximum concentration of compound x

PRG_x = PRG value of compound x

The C_R calculated for the site is 0.40 per million, below the generally accepted one in a million departure point. The U.S. EPA document recognizes that arsenic, while it is considered a cancer-causing compound, is frequently encountered due to natural

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background levels at concentrations above the published PRG value. The document publishes a non-cancer value of 22 mg/kg to be used in the calculation of HI. The HI calculated for the site is 0.16. The U.S. EPA recognizes that a HI of less than 1.0 is generally considered safe.

5.2 Ten Feet Soil Depth down to Groundwater

A model developed by the California RWQCB was used to calculate screening levels for unsaturated soils below ten feet bgs. The model was developed to set uniform criteria for selecting screening concentrations for remediation of VOC impacted sites. The method utilizes a series of formulas based on the nature of the soils encountered at the site, the depth from the sample point to groundwater, and the chemical properties of the compound being screened.

For each of the VOCs encountered at the site, the California RWQCB has provided an attenuation factor (AF) for use in subsequent calculations. Based on the AF, a depth modified AF (AF_D) is calculated, depending on the depth from the sample location to groundwater.

$$AF_D = AF ; D > 150$$

$$AF_D = \left[0.9 \times \frac{D - 40}{110} + 0.1 \right] \times AF ; 40 < D \leq 150$$

$$AF_D = \frac{D \times [0.1 \times AF - 1]}{40} + 1 ; D \leq 40$$

if $AF_D < 1$, then, by definition, $AF_D = 1$

Where:

AF = Attenuation factor (dimensionless)

D = Distance from sample point to groundwater (feet)

Using the AF_D calculated above, a lithology-dependent attenuation factor (AF_T) is calculated. The AF_T values are dependent on the total thicknesses of the gravel, sand, silt, and clay regions between the sample location and groundwater. Each of the different soil types have been assigned a different infiltration rate, based on the experience of the California RWQCB. In general, the California RWQCB estimates that the infiltration rate of water through silt is five times greater than water through clay, water through sand is twice that of water through silt, and water through gravel is twice that of water through sand.

$$AF_T = \frac{AF_D}{D} \times \left[\frac{TGR}{20} + \frac{TSA}{10} + \frac{TSI}{5} + TCL \right]$$

Where: TGR = Total thickness of gravel layer within D (feet)
 TSA = Total thickness of sand layer within D (feet)
 TSI = Total thickness of silt layer within D (feet)
 TCL = Total thickness of clay layer within D (feet)

After calculating the AF_T value for each discreet sample point, a screening concentration (C) is calculated based on the AF_T value and the maximum contaminant level (MCL) for each chemical of concern. MCL values are tabulated in the California Code of Regulations, Title 22. The screening concentration is represented by

$$C = AF_T \times MCL$$

where: MCL = Maximum contaminant levels

For this site, the soil lithography was divided into 10-foot sections, and one C value was computed for each compound in each of the 10-foot sections. The spreadsheet calculation tables are presented in Appendix C. Table 4 lists the laboratory analytical results from the samples collected below 10 feet bgs and highlights those values above the calculated screening levels.

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Based on calculation of screening concentrations, the only compounds encountered in exceedance of the calculated screening concentrations are 1,2-DCA and TCE. None of the other compounds detected in the soil exceeded the calculated screening levels. In the case of 1,2-DCA, the deepest sample encountered with detectable levels of the compound was at 45 feet in Boring NC-2G, approximately 45 feet above the first encountered groundwater. No other sample collected below 25 feet bgs was reported with detectable levels of 1,2-DCA. In each boring, the deepest sample with detectable levels of 1,2-DCA had at least three samples, where 1,2-DCA was not detected, below it. This represents at least 15 feet of soil column.

Although this methodology indicated that 1,2-DCA and TCE exceeded screening concentrations in some soil borings, solvent concentrations decrease with depth and they are capped by the building or with asphalt, thus eliminating any significant driving force. The site is zoned for industrial use and it will remain as an industrial property.

5.3 Regional Groundwater Quality Data

Data gathered from shallow aquifer wells within a 1-mile radius of the site was supplied to Smith Environmental by the Orange County Water District (OCWD) and it is presented on Figures 4, 11 and 12. A summary of the analytical data for the shallow aquifer provided by the OCWD is presented on Table 5. The OCWD listing of the monitoring well data and its corresponding analytical data is included in Appendix D.

The Y-12 facility is surrounded by several OCWD wells at varying radial distances and directions. Groundwater flow is from northeast to southwest. The closest upgradient wells are AM-39 and AM-39A, and the closest downgradient well is AM-41A. Wells AM-39 and AM-39A are to the east of the site, and Well AM-41A is to the west of the site. No wells were identified north of the site. Beyond these immediate shallow aquifer wells, Well FM-5 is located east of the site, Wells AM-16A, AM-40, AM-40A, AMD-3, and FM-2A are located southeast of the site, and Wells AM-18A, AM-31A, FM-1A, FM-7, and FM-7A are located southwest of the site. Shallow aquifer coupled

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wells are distinguished with an "A" designation, with Well AM-39/1 being the deeper well and AM-39A/1 being the shallower well. Well locations and the approximate hydraulic gradient are shown on Figure 11.

The data provided by the OCWD indicates a regional groundwater-hydrocarbon plume consisting of at least seven VOCs, plus chloroform, and FreonTM. Of the two compounds encountered at the site above the screening levels (1,2-DCA and TCE) only TCE is indicated to be present in the groundwater in the vicinity of the site.

Based on OCWD water level information plotted on Figure 11, Smith Environmental estimated that groundwater flow in the vicinity of the site is toward the west to southwest. Well AM-41A is located directly downgradient of the site, while Wells AM-39, AM-39A, and FM-5 are located upgradient of the site.

The groundwater sampling data provided by the OCWD from first quarter 1995 indicates that the highest concentrations of 170 ppb TCE in groundwater is encountered in the upgradient FM-5 well (Figure 12). Concentrations of TCE decrease in the wells as groundwater flows from the FM-5 well toward the southwest, as shown on Figure 12 and highlighted by the TCE concentration contours shown on Figure 4.

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6.0 CONCLUSIONS

6.1 Soil Recommendations

Smith Environmental recommends that no further work be required as it relates to the investigation or remediation of VOCs encountered in the upper 10 feet of soil at the site, based on the review of the published U.S. EPA PRGs. Also, Smith Environmental recommends that no further work be required as it relates to the investigation or remediation of metals encountered at the site, based on the review of the U.S. EPA PRGs and TTLCs.

6.2 Groundwater Recommendation

Smith Environmental recommends that no further soil or groundwater investigation or remediation be required as it relates to the following compounds encountered in the soils below 10 feet bgs, based on calculation of soil screening levels and the industrial use of the site:

- 1,1-Dichloroethane (1,1-DCA)
- 1,1-Dichloroethene (1,1-DCE)
- 1,2-Dichloroethene (1,2-DCA)
- Toluene
- 1,1,1-Trichloroethane (1,1,1-TCA)
- 1,1,2-Trichloroethane (1,1,2-TCA)
- Trichloroethene (TCE)

Based on a review of the regional groundwater data provided by the OCWD and in light of the significant upgradient VOCs source that appears to have impacted groundwater in the region, Smith Environmental recommends that no groundwater work be conducted at the site.

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7.0 SUMMARY

The following summarizes the findings of this site investigation:

- Forty-three soil borings and two surface samples were installed at the site from July 1994 to October 1994.
- Excavation and removal of soils containing elevated levels of petroleum hydrocarbons, along with metals and VOCs, was conducted at the site in August 1994.
- Subsurface soils consist mainly of silty clays and medium sands to a depth of approximately 60 feet bgs. Two clay zones were encountered in the region from 60 to 90 feet bgs.
- Groundwater was first encountered beneath the site at approximately 90 feet bgs.
- The following VOCs were encountered in the subsurface soils at the site:
 - 1,2-DCB
 - 1,1-DCA
 - 1,2-DCA
 - 1,1-DCE
 - PCE
 - Toluene
 - 1,1,1-TCA
 - 1,1,2-TCA
 - TCE
 - Xylenes
- Petroleum hydrocarbons consistent with diesel and heavier oils and fuels have been encountered at the site and remediated.

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- None of the metals encountered at the site exceeded TTLC limits or PRGs. The following metals were encountered in the subsurface soils at the site:
 - Arsenic
 - Barium
 - Beryllium
 - Cadmium
 - Total chromium
 - Cobalt
 - Copper
 - Lead
 - Mercury
 - Molybdenum
 - Nickel
 - Thallium
 - Vanadium
 - Zinc
- No individual VOCs encountered in the upper 10 feet of the soil was found to exceed published U.S. EPA PRGs.
- A cancer risk factor of 0.40 per million was calculated for the site using U.S. EPA PRG-based calculations. In general, a cancer risk of less than 1 per million is considered acceptable.
- A health risk index of 0.16 was calculated for the site using U.S. EPA PRG-based calculations for noncancerous compounds. In general, the U.S. EPA considers health risk indices of less than 1 to be safe.
- Of the VOCs encountered in the soils below 10 feet bgs, only 1,2-DCA and TCE exceeded soil screening levels calculated using the California RWQCB method for remediation of VOC-impacted sites. However, the significant regional groundwater plume negates consideration of these chemicals for this site as well as the presence of a concrete or asphalt cap over the affected areas prevents infiltration of surface waters.
- The regional groundwater gradient in the vicinity of the site is westerly to southwesterly.

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- Based on data provided by the OCWD, groundwater containing VOCs, including TCE has been encountered in the region encompassing the site. The highest concentrations of TCE in the immediate area of the site are encountered upgradient, with concentrations decreasing downgradient. Samples collected from upgradient of the site and downgradient of the site show a reduction of TCE concentrations across the Y-12 facility boundaries.
- Smith Environmental recommends that no further action be required as it relates to soil or groundwater investigations or remediation at the site.

REFERENCES

Barclays California Code of Regulations, Title 22. Environmental Health Standards- Hazardous Waste, §66261.24.

California Regional Water Quality Control Board, Los Angeles Region, 1994, Interim Guide for Remediation of VOC Impacted Sites, December.

United States Environmental Protection Agency, Region IX, 1995, Region IX Preliminary Remediation Goals, First Half, 1995, February 1.

EXHIBIT 23

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

2010 IOWA AVENUE, SUITE 100
RIVERSIDE, CA 92507-2409
PHONE: (909) 782-4100
FAX: (909) 781-8288



August 9, 1995

Maneck G. Chichgar
Soil and Water Quality
Northrop Grumman Corporation
One Northrop Avenue
Hawthorne, CA 90250-3277

SUMMARY OF SOIL INVESTIGATIONS, Y-12 FACILITY, 301 ORANGETHORPE
AVENUE, ANAHEIM

Dear Mr. Chichgar:

This is in response to the above-referenced report dated May 1995, prepared by your consultants, Smith Environmental Technologies Corporation. The report presents the results of the soil investigations and limited soil remedial action work conducted at the above-referenced site from October 1994 to February 1995, and includes a request for site closure.

In summary, the investigation included the drilling of forty-three soil borings, excavation and removal of soils containing elevated levels of petroleum hydrocarbon compounds, along with metals and VOCs. Groundwater was encountered beneath the site at a depth of about 90 feet below ground surface (bgs). Soils that were impacted by petroleum hydrocarbons (consistent with diesel and heavier oils and fuel) at the site were remediated. The report indicates that none of the metals encountered at the site exceeded TTC limits or PRGs and that VOC levels in the soil were at levels that are protective of human health. The report indicates that only 1,2-DCA and TCE were found to exceed soil screening levels using the CRWQCB Region 4 Guidelines. The report also concludes that further groundwater investigation is not necessary at the site since the "upgradient" OCWD wells have higher TCE concentrations than the "downgradient" wells.

GROUNDWATER:

We note that only one deep soil boring (CB-1) was drilled at the site and that TCE was encountered in the soil from this boring to

August 9, 1995

its total depth of 90 feet. Groundwater was encountered at 90 feet bgs. No groundwater samples were analyzed. It appears that past activities at the site may have contributed TCE and possibly other solvents to underlying groundwater. Also, we have reviewed the OCWD well data information and found that some of the "upgradient" wells are perforated at different intervals as the "downgradient" wells. Therefore, these wells probably do not fully reflect the existing groundwater quality conditions, especially within the upper saturated region. It is imperative that a representative sample of groundwater from the upper saturated region be collected and analyzed to determine its characteristics. Therefore, we request that Northrop Grumman submit a work plan for performing a groundwater investigation to this office for approval. The work plan should propose and describe, at a minimum:

1. The locations and procedures for drilling, installing and developing three groundwater monitoring wells at the site. One of the monitoring wells should be installed in the anticipated upgradient location, a second well should be installed next to Boring CB-1, the remaining monitoring well should be installed in a location downgradient of the soil contamination area.
2. The procedures for purging, sampling and analyzing groundwater from these wells initially after development, and approximately 4 weeks later. Samples of groundwater from these wells should be analyzed using EPA Method 8240 or 601.
3. Preparation and submittal of a quarterly groundwater sampling plan for the site.

Please submit the requested workplan and a time schedule for the above activities to this office by September 1, 1995.

SOIL:

Based on the results of the soil investigation, it appears that significant soil contamination from petroleum hydrocarbons, metals and VOCs do not exist in the vadose zone at concentrations that necessitates additional soil cleanup efforts. Therefore, the Regional Board will not require further soil remediation actions at the site. However, if in the future, additional information indicates that significant concentrations of contaminants exist in

Mr. Manock G. Chichgar

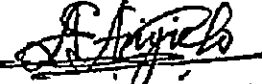
Page 3 of 3

August 9, 1995

the vadose zone at concentrations that may significantly impact groundwater quality, further remedial actions may be required by this Regional Board.

If you have any questions, please contact me at (909)782-3292.

Sincerely,



Augustine E. Anijielo
Associate Water Resources Control Engineer
SLIC Section

cc: Luis Lodrigueza - Orange County Health Care Agency
Roy Herndon - Orange County Water District
Smith Canone Environmental -

AEA/northrop.inv

EXHIBIT 24

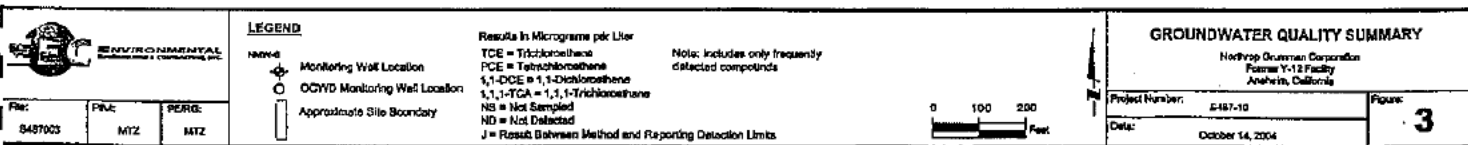
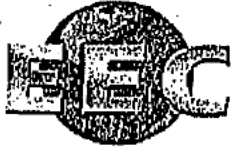


EXHIBIT 25



**ENVIRONMENTAL
ENGINEERING & CONTRACTING, INC.**
601 Parkcenter Drive, Santa Ana, CA 92705
Phone (714) 667-2300 Fax (714) 667-2310



TRANSMITTAL LETTER

January 14, 2005
BEC S487-9

California Regional Water Quality Control Board
3737 Main Street, Suite 500
Riverside, California 92501-3339


Attention: Mr. Manock Chichgar

Subject: Fourth Quarter 2004 Groundwater Monitoring and Sampling
Former Northrop Grumman Y-12 Facility
Anaheim, California

Enclosed, please find one copy of the Groundwater Monitoring and Sampling Report for the former Northrop Grumman Y-12 facility.

Should you have any questions, please call Mark Zeko or myself at (714) 667-2300.

Sincerely,
Environmental Engineering & Contracting, Inc.


Mark Zeko, R.G., C.H.G.
Principal Hydrogeologist

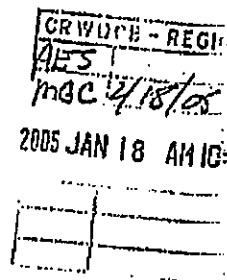
cc.: Michael Martin (NGC)
Malissa McKeith (Loeb & Loeb)

Soil + Groundwater + Air + Wastewater + Stormwater + GIS + Engineering + Remediation + Construction



**ENVIRONMENTAL
ENGINEERING & CONTRACTING, INC.**

501 Parkcenter Drive, Santa Ana, CA 92705
Phone (714) 687-2300 Fax (714) 687-2310



**REPORT
FOURTH QUARTER 2004
GROUNDWATER MONITORING AND SAMPLING**

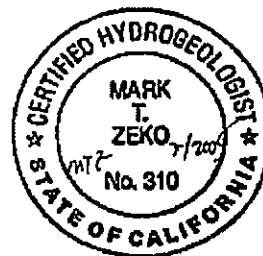
at

Northrop Grumman Corporation
Former Y-12 Facility
301 East Orangefhorpe Avenue
Anaheim, California

Prepared for

Mr. Michael Martin
Northrop Grumman Corporation
Integrated Systems Sector
One Hornet Way, MailStop PA13/W9
El Segundo, CA 90245-2804

EEC Job S487-9
January 10, 2005



By

Andrew Drummond
Project Geologist

Mark Zeko, R.G., C.H.G.
Principal Hydrogeologist

Soil + Groundwater + Air + Wastewater + Stormwater + GIS + Engineering + Remediation + Construction

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Appendix B	Cumulative Groundwater Elevation Data
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Appendix D	Cumulative Groundwater Analytical Data
Appendix E	Laboratory Reports



**ENVIRONMENTAL
ENGINEERING & CONTRACTING, INC.**

501 Parkcenter Drive, Santa Ana, CA 92705
Phone (714) 687-2300 Fax (714) 687-2310

**REPORT
FOURTH QUARTER 2004
GROUNDWATER MONITORING AND SAMPLING**

At

Northrop Grumman Corporation
Former Y-12 Facility
301 East Orangethorpe Avenue
Anaheim, California

1.0 INTRODUCTION

This report presents the Fourth Quarter 2004 groundwater monitoring and sampling results for the former Northrop Grumman Corporation (NGC) Y-12 facility in Anaheim, California (Figure 1). The groundwater monitoring well locations are presented on Figure 2. Quarterly groundwater monitoring and sampling was conducted on November 24, 2004 and December 9, 2004. On November 24, 2004, equipment difficulties arose with the air supply tubing and fittings at several wells during purging, therefore, five wells could not be purged on November 24, 2004. The next available date that a vacuum truck could be scheduled was December 9, 2004, when the remaining five wells were purged and sampled.

During the November 24, 2004, Ms. Laura Moore of the Orange County Water District (OCWD), accompanied EEC during groundwater monitoring for the purpose of collecting split samples from selected wells. Split water samples were collected from wells MW-2, MW-3, MW-7, MW-9B, MW-9C, MW-10B, and MW-10C. The Orange County Water District analyzed these samples for 1,4-dioxane and perchlorate.

Groundwater samples were collected from 14 of the 18 monitoring wells in the sampling program. Samples were not collected from wells NMW-3A, NMW-7A, NMW-9A, and NMW-10A on November 24, 2004, because the wells were dry or did not contain a sufficient amount of water to collect a sample.

2.0 BACKGROUND

A summary of the site description and previous investigations conducted at the site is presented in the following section.

2.1 Site Description

The former Y-12 facility is located at 301 East Orangethorpe Avenue in Anaheim, California. Northrop Grumman Corporation (NGC) operated the facility from 1962 to 1994. NGC primarily used the facility to manufacture floor bennies for Boeing 747 aircraft. Operations at the facility included the storage and use of petroleum hydrocarbons and chlorinated solvents. In 1996, EMP1, an aftermarket automobile parts manufacturer, purchased the property and currently operates at the site.

Soil + Groundwater + Air + Wastewater + Stormwater + GIS + Engineering + Remediation + Construction

2.2 Previous Investigations

Previous environmental investigations conducted at the site have indicated the presence of solvents and solvent degradation products in the subsurface in the vicinity of the former Y-12 facility. In 1995, NGC initiated closure activities at the Y-12 facility. Closure activities included soil sampling and remediation of several soil-impacted areas and the collection of groundwater samples from the uppermost water-bearing zone using hydropunch sampling methods. NGC received closure on the soil issues from the California Regional Water Quality Control Board (RWQCB) on September 18, 1995.

Groundwater analytical results indicated detectable concentrations of tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,1,1-trichloroethane (1,1,1-TCA), and 1,1,2-trichloroethane (1,1,2-TCA) in the groundwater beneath the site. Based on these results, the RWQCB requested that NOC install groundwater monitoring wells at the site and initiate a quarterly groundwater monitoring program. Between 1996 and 2004, NGC installed 18 groundwater monitoring wells at the site. Monitoring wells (NMW-2A, NMW-3A, NMW-5A, NMW-6, NMW-7A, NMW-9A, and NMW-10A) are screened in the discontinuous, occasionally saturated perched zone. Monitoring wells (NMW-1, NMW-2, NMW-3, NMW-4, NMW-5, NMW-7, NMW-8, NMW-9B, NMW-9C, NMW-10B, and NMW-10C) are screened in the shallow zone of the Upper aquifer system.

2.3 Regional Groundwater Conditions

The former Y-12 facility is located within the Forebay portion of the Orange County Groundwater Basin. Groundwater in the vicinity of the site is encountered at depths between 70 and 110 feet below ground surface (bgs) and generally flows to the west-southwest. The uppermost regional aquifer beneath the site is known as the Upper aquifer system. The upper aquifer system is overlain by thin, discontinuous perched groundwater zones in the site vicinity. These perched zones do not contain significant quantities of groundwater.

Groundwater quality in the Anaheim-Fullerton area has been the subject of an on-going study by the Orange County Water District (OCWD). The OCWD has documented a regional dissolved VOC groundwater plume which extends approximately 2.5 miles up-gradient from the former Y-12 facility. Laboratory data from the OCWD monitoring wells indicates that the VOC concentrations diminish down-gradient from the Y-12 facility.

3.0 GROUNDWATER MONITORING & SAMPLING METHODOLOGY

On November 24, 2004, Environmental Engineering & Contracting, Inc. (EEC) measured the depth to static groundwater in 16 of the 18 monitoring wells with a water level indicator. Groundwater could not be measured in wells NMW-3A and NMW-9A because both wells were dry.

On November 24, 2004 and December 9, 2004, a total of sixteen (16) groundwater monitoring wells were purged using a vacuum truck with air assist. During purging operations, field test parameters consisting of temperature, pH, conductivity, turbidity, and water volume purged were measured to evaluate completeness of purging so as to ensure that a representative groundwater sample was collected. Purging was continued until field test parameters had stabilized to within 10 percent on successive readings and a minimum of three casing volumes of water were removed from the well. Wells NMW-7A and NMW-10A went dry prior to removing three casing volumes. The well purging records are presented in Appendix A.

After the wells had recovered to 80% of their original static level, groundwater samples were collected. Groundwater samples were collected using a new disposable bailer from the 14 wells

containing a sufficient volume of groundwater. Following sample collection, each water sample was labeled and placed in a chilled ice chest pending transportation to the project laboratory. All samples were submitted under proper Chain-of-Custody documentation to Cal Tech Analytical Laboratories in Paramount, California for analyses of VOCs by EPA 8260-B. Two QA/QC samples were collected during this sampling event, sample WS-2 duplicate of NMW-7 and a trip blank identified as WS-1.

This report also includes the results of 1,4 dioxane analyses from groundwater samples collected by the Orange County Water District from monitoring wells MW-2, MW-3, MW-7, MW-9B, MW-9C, and MW-10B during the same sampling event.

The purged groundwater (779 gallons) generated during these sampling events was transported to U.S. Filter Recovery Services under a Uniform Hazardous Waste Manifest for disposal. Copies of the two waste manifests from the November 24 and December 9, 2004, are provided in Appendix A.

4.0 GROUNDWATER MONITORING & SAMPLING RESULTS

Depth to groundwater coupled with the measuring point elevation were used to calculate the groundwater elevation at each well, the direction of groundwater flow, and groundwater gradient in the vicinity of the former Y-12 facility.

4.1 Groundwater Flow Direction and Gradient

A summary of the groundwater elevation data is presented in Table 1. A summary of the cumulative groundwater elevation data is provided in Appendix B. A potentiometric surface map was developed utilizing groundwater elevation data collected on November 24, 2004 and is provided as Figure 2. Groundwater flow in the shallow zone of the Upper aquifer system is to the west at a gradient of 0.008 (Figure 2).

4.2 Groundwater Results

A summary of the quarterly groundwater results is presented in Table 2. Results for Trichloroethene (TCE) ranged from below laboratory detection limits in three wells (NMW-6, NMW-9C, and NMW-10C) to 170 micrograms per liter ($\mu\text{g/L}$) (NMW-2A). Results for Tetrachloroethene (PCE) ranged from below laboratory detection limits in two wells (NMW-6 and NMW-8) to 52 ($\mu\text{g/L}$) (NMW-2). Results for 1,1-Dichloroethene (1,1-DCE) ranged from below laboratory detection limits in eleven (11) wells to 33 $\mu\text{g/L}$ (NMW-5A). The Orange County Water District provided EEC with the analytical results of the 1,4-Dioxane groundwater sample analysis. According to the OCWD sample results, 1,4-dioxane was detected in two (2) of the seven monitoring wells (MW-3 and MW-9B) at concentrations of 6.8 $\mu\text{g/L}$ and 1.5 $\mu\text{g/L}$, respectively. Well MW-3 is located onsite and upgradient near the northeast corner of the EMPI building addition. Well MW-9B is located offsite and downgradient at the intersection of National Street and Liberty Avenue. Concentrations of 1,4-dioxane were below laboratory detection limits from the other seven water samples.

The quarterly groundwater results for TCE, PCE, 1,1-DCE, and 1,1,1-TCA are posted along with the results from the previous seven quarters of analytical data on Figure 3. Plots showing the trends of the concentrations detected in each well are presented in Appendix C. A summary of the cumulative analytical data is provided in Appendix D. The laboratory data sheets for the current sampling event are provided in Appendix E.

4.3 QA/QC Results

Two QA/QC samples were submitted to the laboratory for analysis. Sample WS-1 was a trip blank and sample WS-2 was a duplicate sample of NMW-7. The laboratory reported no detectable

compounds in the trip blank sample (WS-1). The laboratory reported PCE and TCE concentrations in duplicate sample (WS-2) at 20 µg/l and 31 µg/l, respectively. These concentrations differed between 1 and 4 µg/l to the reported results from the original sample NMW-7.

5.0 CONCLUSION

Groundwater flow data collected during this quarter is consistent with the groundwater flow patterns and gradients observed at the site over the past seven years. VOC concentrations are generally consistent with the previous quarter in both the onsite and offsite monitoring wells. The OCWD reported detectable concentrations of 1,4-dioxane in two (2) of the seven monitoring wells (MW-3 and MW-9B) at concentrations of 6.8 µg/l, and 1.5 µg/L, respectively.

EEC recommends continued quarterly groundwater monitoring and sampling for VOC constituents. No additional 1,4-dioxane sampling is recommended. This monitoring and sampling will continue to establish VOC trends and their relationship to the regional groundwater plume.

EXHIBIT 26

NORTHROP GRUMMAN

Northrop Grumman Corporation
2301 W. 120th Street
P.O. Box 5032 60/110/N1-3
Hawthorne, California 90250-5032
TFD:98:116

August 25, 1998

William R. Mills, Jr., P.E., General Manager
Orange County Water District
10500 Ellis Avenue, P.O. Box 8300
Fountain Valley, California 92728-8300

RECEIVED

AUG 27 1998

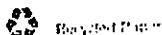
O.C.W.D.

**RE: GROUNDWATER INVESTIGATION/FORMER NORTHROP GRUMMAN
FACILITY/301 E. ORANGETHORPE AVENUE, ANAHEIM, CALIFORNIA**

Dear Mr. Mills:

On August 6, 1998, representatives from Northrop Grumman Corporation met with Mr. Roy Herndon, Greg Woodside, and Ms. Marina West of your staff regarding groundwater investigation activities relating to the former Northrop Grumman Y-12 Facility at 301 E. Orangethorpe Avenue, Anaheim, California. A groundwater monitoring program is currently being conducted by Northrop Grumman at the Y-12 Facility under the oversight of the Regional Water Quality Control Board, Santa Ana Region. The Regional Board has requested that Northrop Grumman extend this investigation to off-site locations downgradient from the Y-12 Facility. In response to this request, Northrop Grumman has proposed placement of a pair of groundwater monitoring wells in the public right of way on Liberty Avenue and a pair of monitoring wells on adjacent private property.

The purpose for the meeting with Mr. Herndon was to describe the proposed sampling program and to invite participation by the Orange County Water District in these activities. As you may be aware, in 1993 the District participated with Northrop Grumman in groundwater monitoring well activities related to the former Northrop Grumman site (the "Anaheim Facility") which was located on the south side of Orangthorpe Avenue directly across from the Y-12 Facility. During environmental assessment activities related to sale of the Anaheim Facility, the Regional Board requested installation of groundwater monitoring wells at off-site locations. Northrop Grumman entered into an arrangement with the Regional Board and the District wherein the District installed and maintained, at Northrop Grumman's expense, certain groundwater monitoring wells in compliance with the Regional Board's request.



C:RH

William R. Mills, Jr., P.E., General Manager
August 25, 1998
Page 2

As discussed with Mr. Herndon, Northrop Grumman is interested in entering into a similar arrangement with the District relating to the groundwater monitoring wells which are proposed for installation in the right of way on Liberty Avenue. We would be interested in meeting with you to discuss this proposal at your convenience. Please contact either Mel Calkins at (310) 332-7662 or Maneck Chichgar at (310) 331-3736 in order to discuss this matter further.

Very truly yours,



Thomas F. Daly
Senior Staff Counsel
Environmental Law

EXHIBIT 27

NORTHROP GRUMMAN

Integrated Systems Section
Northrop Grumman Corporation
One Hornet Way
El Segundo, CA 90245-2800

SANTA ANA REGION	
REC'D	DATE
	SEP 01 2000
AES	9/1/2000
REC	9/1/2000
PA	12:00:286

August 31, 2000

Maneck Chichgar,
CRWQCB - Santa Ana Region
3737 Main Street, Suite 500
Riverside, CA 92501-3339

Northrop Y-12

RE: ADDITIONAL OFF-SITE INVESTIGATION, FORMER NORTHROP GRUMMAN Y-12 FACILITY, 301 ORANGETHORPE AVENUE, ANAHEIM, CALIFORNIA

Dear Mr. Chichgar:

On August 16, 2000, the Regional Water Quality Control Board, Santa Ana Region, issued a letter directing Northrop Grumman Corporation to conduct activities relating to a request by the Regional Board that Northrop Grumman install two additional groundwater monitoring wells downgradient from the former Northrop Grumman Y-12 facility in Anaheim, California. The letter demands submittal of a workplan regarding installation of two groundwater monitoring wells by September 1, 2000 and submittal of a technical report detailing the findings of the requested investigation by October 23, 2000.

Northrop Grumman's position in this matter remains as stated in its letter dated July 7, 2000 and as discussed with Regional Board staff in a meeting on July 19, 2000. As described in Northrop Grumman's proposed workplan, dated June 5, 2000, the use of hydropunch technology is a technically valid assessment strategy which will assist in defining the extent of any compounds which may have been released from the former Y-12 facility. For the reasons stated in its letter of July 7, 2000, Northrop Grumman strongly believes that the request for installation of groundwater monitoring wells is not justified.

It is Northrop Grumman's belief that the presence of volatile organic compounds (VOCs) in groundwater adjacent to the Y-12 facility is attributable in part to up-gradient and lateral potentially responsible parties (PRPs). As detailed in Northrop Grumman's letter of July 7, 2000, the Regional Board is aware of several PRPs in the area of the Y-12 facility which potentially could have discharged VOCs to groundwater. While certain of these facilities are located laterally to current groundwater flow in the vicinity of the Y-12 facility, groundwater flow direction in the area is known to be seasonally variable and has changed substantially over time from the current flow direction. To Northrop Grumman's knowledge, the Regional Board has not requested that the known PRPs participate in any substantial investigation of groundwater conditions.



Maneck Chichgar
Page 2
August 31, 2000

Three of these PRP facilities are located at the western property boundary of the former Y-12 facility (Figure 1). Two of the facilities include a dry cleaning operation and former metal finishing/plating operations at 1808 American Street (250 feet north of NMW-1) and a former printing facility at 1816 American Street (450 feet north of NMW-1). Both of these facilities are located in a direction that is cross-gradient to the current direction of groundwater flow at the site. The 1808 American Street address was investigated by the CRWQCB in August 1988. Notations in CRWQCB files contained the following statement as a result of this investigation: "The positive results from the Petrex survey confirm that TCE was used and discharged onsite."

In addition, sewer lines from one of these facilities (1808 American Street) run south along American Street and then west along Liberty Avenue, passing by NMW-7 and NMW-7a. The CRWQCB files for this site include an inspection report which states that "an individual was jailed due to haz waste violations - had an open trench to sewer." It is not clear if TCE was discharged to the sewer, but it remains a possibility.

The third PRP location situated adjacent to the former Y-12 property boundary is located at 184 E. Liberty Avenue (50 feet west of NMW-1) and is located directly down-gradient of the former Y-12 property. This site was used for circuit-board manufacture and records indicate remediation of metal-impacted soils at the site. A fourth adjacent PRP location is at 125 E. Orangethorpe Avenue (approximately 250 feet west of the site). This site is located down-gradient of the former Y-12 site, and between the Y-12 site and the location of the requested new wells. The site, Space Springs and Stamping Company, is a metal finishing shop with a record of 1,1,1-trichloroethane use on-site.

As stated, Northrop Grumman's position is that the requested groundwater monitoring wells are unjustified and that hydropunch sampling will adequately characterize groundwater conditions at the site. However, Northrop Grumman will install the two requested groundwater monitoring wells as an accommodation to the Regional Board with the expectation that: (1) the two groundwater monitoring wells will be the only wells which Northrop Grumman will install; (2) further investigation, if any, will be conducted through use of hydropunch sampling; and (3) the Regional Board will commit in writing to Northrop Grumman that it will pursue the PRPs discussed above in investigation of conditions in the area of the former Northrop Grumman Y-12 facility. A proposed Workplan for this activity is attached.

If you have any questions in regard to this matter, please contact Tim Haltmeyer at (310) 332-3169 or Thomas Daly at (310) 332-5665.

Very truly yours,



Timothy A. Haltmeyer, Manager
Environmental, Safety, Health & Medical
Org. PA12/W9 - Phone: 310-332-3169

EXHIBIT 28

California Regional Water Quality Control Board
Santa Ana Region

Cleanup and Abatement Order No. R8-2003-108
for
Northrop Grumman Corporation, Y-12 Facility
310 East Orangethorpe Avenue
Anaheim, Orange County

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. The Northrop Grumman Corporation (Northrop) formerly operated a facility (referred to as the Y-12 Facility) at 301 East Orangethorpe Avenue in the City of Anaheim. The site is bounded to the east by a residential trailer park, to the west by numerous small businesses, to the south by Orangethorpe Avenue, and to the north by the Fullerton Creek Channel. This rectangular-shaped, 9.6-acre parcel included an approximately 100,000 square foot building located along its southern boundary with Orangethorpe Avenue. The facility manufactured aircraft parts from 1962 to 1994. The site was sold in 1996 and is now utilized as an automotive aftermarket products packing and storage facility.
2. Northrop's activities at this facility included vapor degreasing, metal quenching, painting and chemical treatment of manufactured aircraft parts. Wet process chemicals were primarily used in paint booths and stored at the facility. These paints contained cadmium and chromium in significant concentrations and quantities. Caustics (acids and bases), organic solvents, paints and soaps were also used and stored at the facility.
3. In 1995, Northrop submitted a report that described soil investigation and remediation activities conducted at the site between October 1994 and February 1995. Soil containing petroleum compounds, metals and volatile organic compounds (VOCs) was remediated by excavation in 1994 and 1995. In 1995, Regional Board staff issued a "no further action" letter for the soil remediation performed in specific areas of the Y-12 Facility.
4. Since 1995, Regional Board staff has provided regulatory oversight of several phases of groundwater investigations conducted by Northrop. Between 1996 and 2001, Northrop installed 15 groundwater monitoring wells at and downgradient of the facility. As a result of Northrop's reluctance to install some of the downgradient monitoring wells, the Executive Officer issued Investigation Orders pursuant to Section 13267 of the California Water Code on two occasions, August 16, 2000 and April 21, 2001, requiring that the monitoring wells be installed.
5. Groundwater at and downgradient of the site generally occurs at a depth of about 100 to 110 feet below ground surface (bgs), and flows to the west-southwest. Nine of the wells monitor groundwater at this depth. Most of the other wells monitor the

shallower groundwater at depths of about 80 to 90 feet bgs, and are occasionally dry.

6. The primary VOC found in the groundwater is trichloroethylene (TCE), although perchloroethylene (PCE), 1,1-dichloroethylene (DCE) and 1,1,1-trichloroethane (TCA) are also present. The following table lists the maximum concentrations of VOCs found in groundwater at the site since 1996:

COMPOUNDS	ppb *	MAXIMUM** CONTAMINANT LEVEL (MCL) - ppb
PCE	400	5
TCE	1700	5
1,1-DCE	537	8
1,1,1-TCA	192	200

* parts per billion

** Primary MCLs for drinking water are established by the Department of Health Services (DHS) and can be found in Title 22 California Code of Regulations, Section 64444 (organic compounds).

7. Northrop has installed monitoring wells extending approximately 700 feet downgradient of the site. Concentrations of VOCs in these wells are significantly lower than the concentrations of VOCs that have been present in monitoring wells at the site. However, these monitoring wells are not located directly downgradient of the suspected source area at the site, and they are not directly downgradient of the monitoring wells at the site that have exhibited the highest concentrations of VOCs. Therefore, additional downgradient monitoring wells are necessary to sufficiently characterize the extent of VOC migration from the site.
8. Three of the on-site monitoring wells were installed along the upgradient boundary of the site to determine if VOCs were migrating onto the site from an off-site source. TCE has consistently been detected in these on-site, upgradient wells. Therefore, it is likely that TCE is migrating onto the site from an off-site source. However, the concentrations of TCE in these on-site, upgradient wells are significantly less than the concentrations of TCE that have been detected in the on-site wells located directly downgradient of the suspected source area, and significantly less than the concentrations of TCE that have been detected in groundwater samples obtained from soil borings at the site that were drilled at and downgradient of the suspected source area. Also, although PCE and 1,1-DCE are intermittently detected in the on-site monitoring wells along the upgradient boundary at concentrations generally less than 5 ppb, PCE and 1,1-DCE are consistently detected in the other on-site wells and downgradient off-site wells at significantly higher concentrations. Therefore, although it is likely that VOCs at relatively low concentrations are migrating onto the site, the significantly higher

concentrations of VOCs at and downgradient of the site indicate that Northrop has discharged waste containing VOCs that has impacted groundwater.

9. The Orange County Water District (OCWD) conducted a groundwater study to investigate the magnitude and extent of VOCs in the Anaheim-Fullerton area of the Santa Ana Forebay Groundwater Subbasin. As a result of their study, the OCWD identified an area of groundwater containing VOCs that encompasses several square miles. The VOCs are present primarily in the shallowest water-bearing zone (less than 250 feet bgs). These VOCs originated both from various known and some unidentified industrial sources in the area. The VOCs are also present to a lesser extent in the deeper aquifer, and have already impacted several municipal water supply wells. The VOCs in the shallow water-bearing zone are continuing to migrate toward the deeper aquifer and the municipal water supply wells that extract groundwater from the deeper aquifer.
10. The OCWD has evaluated the installation of four or more extraction wells to control the migration of VOCs and to remove VOCs from this large impacted area of the Santa Ana Forebay Groundwater Subbasin. One of the extraction wells associated with OCWD's proposed Forebay VOC Groundwater Cleanup Project is proposed to be located immediately downgradient of the Y-12 Facility. If installed, this well is expected to clean up the VOCs in the groundwater that were discharged by Northrop. Since 2001, Northrop and the OCWD have attempted to negotiate a proposed settlement of the cost to remediate Northrop's impact to groundwater. However, the OCWD and Northrop have not been able to agree on an appropriate settlement.
11. In a letter dated August 21, 2003, the OCWD notified Regional Board staff that the OCWD is in the feasibility study stage of the project and that OCWD's Board of Directors has not made a final determination to construct any of the extraction wells, or whether to construct the project, as a whole. The letter also stated that the Regional Board should not consider OCWD's feasibility study as an indicator that OCWD will clean up VOCs discharged by another party.
12. Northrop has discharged waste into waters of the State, specifically the Santa Ana Forebay Groundwater Subbasin, and is causing or permitting a condition of pollution or nuisance. Therefore, it is appropriate to order Northrop to cleanup and abate the effects of the waste discharge.
13. The beneficial uses of the Santa Ana Forebay Groundwater Subbasin include:
 - a. Municipal and domestic supply,
 - b. Agricultural supply,
 - c. Industrial service supply, and
 - d. Industrial process supply.

November 14, 2003

14. California Water Code Section 13304 allows the Regional Board to recover reasonable expenses from responsible parties for overseeing cleanup and abatement activities. It is the Regional Board's intent to recover such costs for regulatory oversight work conducted in accordance with this order.
15. This enforcement action is being taken for the protection of the environment and, as such, is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.) in accordance with Section 15321, Chapter 3, Title 14, California Code of Regulations.
16. The issuance of this Cleanup and Abatement Order in no way limits the authority of this Regional Board to institute additional enforcement actions or to require additional investigation and cleanup at the facility consistent with the California Water Code. This Order may be revised by the Executive Officer as additional information becomes available.

IT IS HEREBY ORDERED that, pursuant to Section 13304, Division 7, of the California Water Code, Northrop shall:

1. By January 5, 2004, submit a work plan and time schedule for the expeditious installation of a sufficient number of groundwater monitoring wells to adequately characterize the extent of VOCs in groundwater that have resulted from discharges at Northrop's Y-12 Facility. These monitoring wells shall be installed at locations that intercept groundwater that is passing, or has passed, between downgradient monitoring wells NMW-9A and NMW-8, such that it can reasonably be expected that groundwater that has passed beneath the suspected on-site source area, and is directly downgradient of on-site monitoring well NMW-2A, can be sampled. The work plan and time schedule shall be subject to the approval of the Executive Officer. The time schedule shall provide for the installation of the monitoring wells within 60 days of the Executive Officer's approval of the work plan.
2. Implement the work plan noted in 1., above, as approved by the Executive Officer.
3. Submit and implement any additional work plans that the Executive Officer deems necessary to sufficiently characterize the nature and extent of VOCs in groundwater that have resulted from discharges at Northrop's Y-12 Facility.
4. By February 9, 2004, submit a conceptual feasibility study of alternative groundwater remediation scenarios that potentially could be implemented after sufficient characterization of VOCs in groundwater that have resulted from discharges at Northrop's Y-12 Facility is completed.
5. Within 90 days of being notified by the Executive Officer that sufficient characterization of VOCs in groundwater has been accomplished in order to initiate


November 14, 2003

5

groundwater remediation, submit a groundwater remediation plan and a time schedule to cleanup VOCs in groundwater that have resulted from discharges at Northrop's Y-12 Facility. The remediation plan and time schedule will be subject to the approval of the Executive Officer.

6. Implement the groundwater remediation plan noted in 5., above, as approved by the Executive Officer.
7. Submit and implement any additional remedial action plans that the Executive Officer deems necessary to cleanup or abate the effects of the wastes discharged at the Y-12 Facility.

Failure to comply with the terms and conditions of this order may result in imposition of civil liabilities, either administratively by the Regional Board or judicially by the Superior Court in accordance with Section 13350 of the California Water Code, and/or referral to the Attorney General for such action as may be deemed appropriate.


Gerard J. Thibeault
Executive Officer

November 14, 2003

EXHIBIT 29



California Regional Water Quality Control Board

Santa Ana Region

Terry Tammunen
Secretary for
Environmental
Protection

3737 Main Street, Suite 500, Riverside, California 92501-3348
(909) 782-1130 • Fax (909) 781-6283
<http://www.waterb.ca.gov/rwqcid>



Arnold Schwarzenegger
Governor

February 3, 2004

Mr. Timothy Haltmeyer, Manager
Environment, Health, Safety and Medical
Northrop Grumman Corporation
One Hornet Way, PA12/W9
El Segundo, CA 90245

**APPROVAL OF WORKPLAN FOR INSTALLATION OF MONITORING WELLS
REQUIRED BY CLEANUP AND ABATEMENT ORDER NO. R8-2003-108, FORMER
NORTHROP GRUMMAN CORPORATION Y-12 FACILITY, 301 ORANGETHORPE
AVENUE, ANAHEIM, CA**

Dear Mr. Haltmeyer:

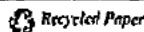
We have reviewed the Workplan dated January 5, 2004, submitted by your consultants, Environmental Engineering and Contracting, Inc. (EEC), in compliance with Cleanup and Abatement Order (CAO) No. R8-2003-108. The CAO required Northrop Grumman Corporation (NGC) to install off-site groundwater-monitoring wells. These wells will be installed to determine the vertical and lateral extent of the groundwater contamination west of the former NGC's Y-12 facility.

EEC has proposed to drill one 14 -inch diameter soil boring to a depth of 200 feet at a location equidistant between existing wells NMW-8 and NMW-9. A conductor casing will be installed to a depth of 50 feet, and reverse mud-rotary technique will be utilized to advance the boring to total depth. Drill cuttings will be collected and logged every five-feet. Geophysical logging [resistivity (single point, 16-inch, 64-inch and guard), spontaneous potential, natural gamma, caliper and deviation logs] will be conducted in the open hole to aid in determining sub-surface lithology and placement of the well screens and seals.

Two 4-inch diameter wells (schedule 80 PVC) will be installed in the soil boring at depths of 120 and 200 feet. Each well will have 10 feet of stainless steel screen. The proposed screen intervals are 110 feet below ground surface (bgs) to 120 feet bgs, and 190 feet bgs to 200 feet bgs, with PVC blank casing extending to the ground surface. If a perched aquifer is encountered at 80 feet, a 2-inch diameter PVC well will be installed with 10 feet of screen at the soil-water interface. A licensed surveyor will survey the wellheads. The wells will be developed, and groundwater will be sampled and analyzed for volatile organic compounds (VOCs) by EPA Method 8260B. A report of the findings of this investigation will be submitted to Board staff for review.

Your workplan is approved. As stated in the CAO, you are required to install the ground water monitoring wells within sixty days of the date of this letter. Therefore, the wells must be

California Environmental Protection Agency



February 3, 2004

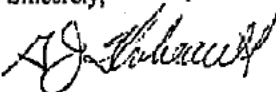
installed by April 6, 2004. A report on the installation of the wells shall be submitted by April 27, 2004. Also, depending on the results of this investigation, NGC may be required to further delineate the contaminant plume. You are also reminded that as stated in the CAO, by February 9, 2004, you are required to submit a conceptual feasibility study for alternate groundwater remediation scenarios.

Because two additional contaminants, 1,4-dioxane and perchlorate, have been identified in the groundwater in the vicinity of the Y-12 facility, we request that you also analyze the groundwater for 1,4-dioxane by EPA Method 8270C and for perchlorate using EPA Method 314.0. Please provide the results of these analyses in your investigation report.

We are aware that in the past you have experienced difficulty in obtaining access agreements with property owners in this area. If you experience difficulty in obtaining an access agreement for the proposed well, please notify Board staff immediately, as Board staff and/or Orange County Water District staff may be able to provide assistance in this matter.

Please contact us five days prior to the initiation of any drilling and sampling activities pertaining to the new wells. If you have any questions, please contact Maneck G. Chichgar, Project Manager, at (909) 782-3252, or you may call Ann Sturdivant, Chief of our SLIC/DoD Section, at (909) 782-4904.

Sincerely,




Gerard J. Thibeault
Executive Officer

cc: Malissa H. McKeith, Loeb & Loeb
Virginia Grebbien, OCWD
Mark Zeko, EEC, Inc.

C:\Data\Wentz\op\Appt\WF CAO Resp.

California Environmental Protection Agency

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EXHIBIT 30



California Regional Water Quality Control Board

Santa Ana Region

Terry Tammlinen
Secretary for
Environmental
Protection

3737 Main Street, Suite 500, Riverside, California 92501-3148
(909) 782-4130 • Fax (909) 781-6285
<http://www.thrcb.ca.gov/rwqcb8>



Arnold
Schwarzenegger
Governor

July 14, 2004

Mr. Timothy Haltmeyer, Manager
Environment, Health, Safety and Medical
Northrop Grumman Corporation
One Hornet Way, PA12/W9
El Segundo, CA 90245

RESPONSE TO LETTER AND REPORT DATED JUNE 4, 2004, GROUNDWATER INVESTIGATION RESULTS - CLEANUP AND ABATEMENT ORDER (CAO) NO. R8-2003-108, FORMER NORTHROP GRUMMAN CORPORATION (NGC) Y-12 FACILITY, 301 ORANGETHORPE AVENUE, ANAHEIM, CA

Dear Mr. Haltmeyer:

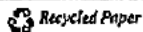
We have reviewed the letter cited above, submitted by Ms. McKeith on behalf of NGC, which provided the groundwater investigation results for the installation of new monitoring wells NMW-10A, B and C. The wells were installed pursuant to CAO No. R8-2003-108, to further characterize the groundwater downgradient of the former Y-12 facility. Analytical results of samples obtained from the wells indicate that in well NMW-10C, trichloroethylene (TCE) and tetrachloroethylene (PCE) were detected at concentrations of 12 parts per billion (ppb) and 3.3 ppb, respectively, and in well NMW-10B, PCE was detected at 19 ppb (NMW-10A is dry).

Based upon these results, and previous analytical results of samples obtained from wells at the site, it appears that no further investigations downgradient of the former Y-12 facility are necessary at this time, and that sufficient characterization of VOCs (volatile organic compounds) in groundwater has been accomplished in order to initiate groundwater remediation. Therefore, in accordance with Item 5 of CAO No. R8-2003-108, please submit a groundwater remediation plan and a time schedule by October 13, 2004 to clean up VOCs in groundwater that have resulted from discharges at NGC's Y-12 facility. Also, the new wells shall be included in all future monitoring events.

In addition, NGC did not implement our request to analyze groundwater samples for 1,4-dioxane and perchlorate. Ms. McKeith's letter stated that Northrop did not sample for 1,4-dioxane because there was no evidence of 1,4-dioxane in samples collected in 2002 in any of the NGC-installed monitoring wells, and sampling the new wells would not add any material new information to the groundwater investigation. However, the sampling was conducted in 2001, not 2002, and 1,4-dioxane was detected at values ranging from 0.52 micrograms per liter (µg/l) to 5.4 µg/l in wells NMW-1, NMW-2, NMW-3, NMW-4 and NMW-7.

1,4-dioxane is a stabilizer that is commonly used in solvents containing TCE and TCA. NGC has used both TCA and TCE in its degreasing operation at the Y-12 facility. In light of this fact, and the previous detection of 1,4-dioxane in monitoring wells at the site, in accordance with

California Environmental Protection Agency



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NY

Mr. T. Haltmeyer

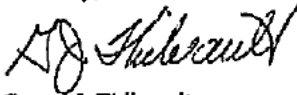
- 2 -

July 14, 2004

Section 13267 of the California Water Code, you are hereby directed to submit a technical report that includes analytical results for 1,4-dioxane for all wells, for the next two groundwater-monitoring events for the Y-12 facility. Also, our request for NGC to analyze groundwater samples for perchlorate was not an order. It was merely to solicit your assistance in obtaining information to enable us to better characterize the presence of perchlorate in the Orange County groundwater basin. Since NGC does not intend to analyze groundwater samples for perchlorate, please notify Board staff at least five days prior to the next sampling event, so Board staff can be present to obtain samples from NGC's monitoring wells.

If you have any questions, please contact Maneck G. Chichgar, Project Manager, at (909) 782-3252, or you may call Ann Sturdivant, Chief of our SLIC/DoD Section, at (909) 782-4904.

Sincerely,



Gerard J. Thibeault
Executive Officer

cc: Malissa McKeith, Loeb and Loeb, LLP
Virginia Grebbien, OCWD
Mark Zeko, EEC, Inc.

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California Environmental Protection Agency

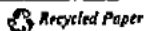


EXHIBIT 31

105
AES
MGC

2004 OCT 13 AM 9:33

GROUNDWATER REMEDIATION PLAN

FORMER Y-12 FACILITY
301 ORANGETHORPE AVENUE
ANAHEIM, CALIFORNIA

PREPARED FOR:
**NORTHROP GRUMMAN SYSTEMS
CORPORATION**

URS PROJECT No. 27704081

OCTOBER 12, 2004

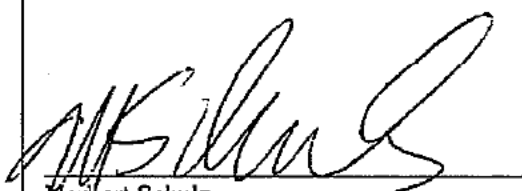
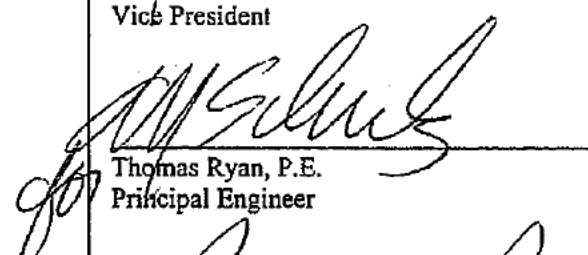
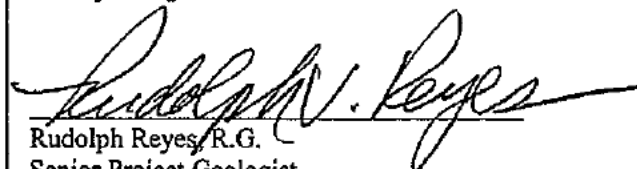
WORKPLAN

GROUNDWATER REMEDIATION PLAN FORMER Y-12 FACILITY 301 ORANGETHORPE, AVENUE ANAHEIM, CALIFORNIA

Prepared for

Northrop Grumman Systems Corporation
One Hornet Way, PA13/W5
El Segundo, California 90245

URS Project No. 27704081


Norbert Schulz
Vice President
Thomas Ryan, P.E.
Principal Engineer
Rudolph Reyes, R.G.
Senior Project Geologist

October 12, 2004

URS

1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108-4314
619.294.9400 Fax: 619.293.7920



October 12, 2004

Mr. Maneck G. Chichgar
California Regional Water Quality Control Board
Santa Ana Region
3737 Main Street, Suite 500
Riverside, California 92501-3348

Subject: Groundwater Remediation Plan
Former Y-12 Facility
301 Orangethorpe Avenue
Anaheim, California
CAO No. R8-2003-108

Dear Mr. Chichgar:

Please find enclosed a remediation plan and time schedule to implement initial activities to address volatile organic compounds in groundwater that have resulted from discharges from the former Northrop Grumman Systems Corporation (NGSC) Y-12 Facility at 301 Orangethorpe Avenue in Anaheim, California. This plan was prepared on behalf of NGSC by URS Corporation (URS) in response to your directive letter of July 14, 2004 and in accordance with Cleanup and Abatement Order (CAO) No. R8-2003-108.

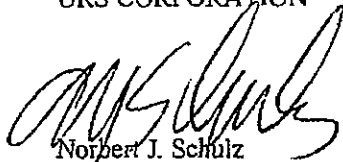
A copy of this plan is also being provided to the current property owner. Please be aware that NGSC has not been in communication with the owner in some time and that an agreement for site access for remediation will likely require negotiation between the parties.

This letter also services to provide notice that the next regularly scheduled groundwater monitoring event will take place in November. Samples collected during this event will be analyzed for 1,4-dioxane as requested in your letter. NGSC or its sampling consultant will provide you with a notification of the specific dates at least five days prior to the event so that Board staff can be present to obtain samples for perchlorate analyses.

Please contact either the undersigned or Mr. Michael Martin of NGSC at 301-331-1766 if you have any questions regarding this plan or other aspects of the project.

Sincerely,

URS CORPORATION



Norbert J. Schulz
Vice President

NJS:afs

URS Corporation
1615 Murray Canyon Road
Suite 1000
San Diego, CA 92108
Tel: 619.294.9400
Fax: 619.293.7920

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SECTION 1 INTRODUCTION AND BACKGROUND

This document presents a remediation plan and time schedule to implement initial activities to address volatile organic compounds (VOCs) in groundwater that have resulted from discharges from the former Northrop Grumman Systems Corporation (NGSC) Y-12 Facility at 301 Orangethorpe Avenue in Anaheim, California (Figure 1). This plan was prepared on behalf of NGSC by URS Corporation (URS) in response to your directive of July 14, 2004 and in accordance with Cleanup and Abatement Order (CAO) No. R8-2003-108.

1.1 BACKGROUND

NGC manufactured aircraft parts at the former Y-12 facility between 1962 and 1994. Activities in the Y-12 facility included vapor degreasing, metal quenching, painting and treatment of aircraft parts. The site was sold in 1996 and is now used as an automotive products packaging and storage facility. Before selling the property, NGSC conducted an investigation of soil conditions and performed limited soil remediation of petroleum compounds, metals and VOCs. In 1995 the California Regional Water Quality Control Board, Santa Ana Region (RWQCB) issued a "no further action" letter for the soil remediation performed at specific locations within the former Y-12 facility.

Since 1995, NGSC has performed several phases of groundwater quality investigation at the site. The following is a brief chronology of these activities:

- In 1996, four groundwater wells (NMW-1 to NMW-4) were installed in the Upper aquifer system and quarterly monitoring was initiated.
- In early 1998, three wells (NMW-2A, 3A and 5A) were installed in the shallow, semi-perched groundwater zone and one well (NMW-5) was installed in the Upper aquifer system.
- In late 1998, one additional semi-perched zone well (NMW-7A) and one Upper aquifer well (NMW-7) were installed downgradient (west) of the site.
- In late 2000, well NMW-6 was installed in the semi-perched zone and NMW-8 was installed in the Upper aquifer system, also downgradient of the site.
- In late 2001, wells NMW-9A, B and C were installed in the semi-perched, shallow portion of the Upper aquifer system and within the deeper portion of the Upper aquifer system, respectively, to further characterize down gradient conditions.
- The final well installation occurred in early 2004 and included one additional, three-well cluster (NMW-10A, B and C) downgradient of the site.

The results of the NMW-10 well cluster installation were presented to the RWQCB in a report dated June 3, 2004 (EEI, 2004a). In a response letter dated July 14, 2004, the RWQCB concluded that no further investigations downgradient of the Y-12 facility were necessary and directed NGSC to formulate a plan for groundwater remediation.

1.2 REGIONAL GROUNDWATER CONTAMINATION

The former Y-12 facility is located within the downgradient portion of a regional groundwater contamination plume within the Santa Ana Forebay Groundwater Subbasin as identified by the Orange County Water District (OCWD, 1991). As a result of their study, the OCWD has identified an area of groundwater containing chlorinated VOCs that encompasses several square miles. These VOCs occur primarily in the shallowest water-bearing zones that occur within approximately 250 feet of the ground surface. VOCs are also present in deeper aquifers and have impacted certain municipal supply wells.

SECTION 2 CONCEPTUAL SITE MODEL

In order to plan and implement a successful remediation program, it is important to develop a comprehensive framework for a site that identifies source areas, contaminant types and characteristics, environmental factors such as geology and hydrogeology, potential exposure pathways and risk factors. This framework is often termed a Conceptual Site Model (CSM). The CSM is a dynamic model of site conditions that is subject to change, reinterpretation and modification based on the collection and analysis of new data. The following sections present our current CSM and frame the boundaries of the proposed remedial activity.

2.1 GEOLOGY

The Orange County Groundwater Basin is dominated by a deep structural depression containing a thick accumulation of freshwater bearing interbedded marine and continental sand, silt and clay deposits (DWR, 1967). The proportion of fine sediments generally increases toward the coast dividing the basin into what are referred to in the literature as forebay and pressure areas (DWR, 1967; OCWD, 1991).

The forebay area, encompassing most of the cities of Anaheim and Fullerton and portions of the City of Orange, is characterized by a stratigraphic sequence of relatively coarse-grained deposits of sands and gravels with occasional lenses of clay and silt. The sediments beneath the site have been described by previous consultants as unconsolidated alluvial sediments.

The sediments above approximately 70-feet below ground surface (bgs) are comprised predominately of poorly graded sand interbedded with thin beds of silts, silty sands and clayey sands. The sediments between approximately 70 feet to 100 feet bgs are described as predominately a clay interval with thin discontinuous beds of gravelly sands, sandy clays, silty clays and clayey sands. This clay interval has been described as an aquitard in the literature (OCWD, 1991). The sediments below the clay interval are characterized by poorly graded saturated sands to a depth of approximately 200 feet bgs. Figures 3 and 4 provide geologic cross sections through the former Y-12 facility site.

2.2 HYDROGEOLOGY

The Orange County Groundwater Basin underlies the northern half of Orange County beneath broad lowlands known as the Tustin and Downey Plains. The basin is divided into three aquifer systems: The Upper aquifer system; the Middle aquifer system; and the Lower aquifer system. Semi-perched aquifers at the surface overlay much of the central and coastal portions of the basin (Herndon, 1992). The eastern part of the basin is referred to as the Forebay and is where the majority of recharge occurs in the basin.

The Y-12 site is located within the Forebay area of Orange County Groundwater Basin. The uppermost regional aquifer beneath the site is the Upper aquifer that is encountered at depths of between 110 to 130 feet bgs. The first occurrence of groundwater beneath the site is in poorly graded sands at approximately 100-feet bgs, above the Upper aquifer in localized, small discontinuous semi-perched groundwater zones. According to Roy Herndon Manager of the Hydrogeology Department of the OCWD, the term "semi-perched" is used to describe any shallow water-bearing zone that, although underlain by fully saturated sediments, is substantially hydraulically separated from the underlying aquifers. It has been his

observation that discontinuous semi-perched zones occur in the Forebay area creating localized aquitards that impede vertical groundwater (and contaminant) flow into underlying aquifers (Herndon, 1992).

Regional groundwater flow in the vicinity of the site is generally to the west-southwest having a gradient of 0.001 feet per foot. A number of groundwater monitoring wells are installed at the site to monitor conditions in the semi-perched zone. Most of these wells are observed to be dry during quarterly monitoring events. Only wells NMW-2A and 5A located along the western side of the site building consistently contain water (Figure 2). It is possible that this water may be present due to recharge from onsite irrigation or a potable water leak on or in the vicinity of the site.

2.3 CONSTITUENTS OF CONCERN

VOCs have been identified by the RWQCB in the CAO and subsequent communications as the constituents of concern (COCs) for the purposes of remediation. As summarized in a report submitted to the RWQCB on June 2, 1995 (Smith Environmental, 1995), a number of VOCs were identified in soil samples collected beneath the former Y-12 facility. The following VOCs were present at concentrations above method detection limits:

- 1,2-Dichlorobenzene (1,2-DCB)
- 1,2-Dichloroethane (1,2-DCA)
- Tetrachloroethene (PCE)
- 1,1,1-Trichloroethane (1,1,1-TCA)
- Trichloroethene (TCE)
- 1,1-Dichloroethane (1,1-DCA)
- 1,1-Dichloroethene (1,1-DCE)
- Toluene
- 1,1,2-Trichloroethane (1,1,2-TCA)
- Xylene isomers

In the most recent quarterly groundwater monitoring event (Second Quarter 2004) only TCE, PCE, 1,1-DCE and cis, 1,2-DCE were detected (EEI, 2004b).

The VOCs most likely related to past operations include TCE, 1,1,1-TCA and 1,1-DCE. Degreasing operations at the former Y-12 facility were known to use TCE until 1980 followed by the use of 1,1,1-TCA until the facility was closed (Smith, 1995). The presence of 1,1-DCE is attributed to the physiochemical breakdown of 1,1,1-TCA in the environment. PCE is not known to have been used at the facility and was only detected in a small number of soil samples and at very low concentrations. Consequently, PCE is not considered to be a site-related COC. Other compounds such as cis, 1,2-DCE, 1,1-DCA, 1,2-DCA and 1,1,2-TCA may be present due to reductive dechlorination of TCE and/or 1,1,1-TCA. Petroleum-related VOCs including toluene, 1,2-DCB and xylene may be related to the past use of cutting oils at the site.

2.4 SOURCE AREAS

From the soil investigation data summarized by Smith Environmental, two areas of the former facility are recognized as the primary potential source areas of residual VOCs in soil and most likely within the semi-perched zone; 1) the quench oven area and 2) the vapor degreaser area (Figure 2). Concentrations of TCE up to 340 ug/kg were detected in soils in the quench oven area. Investigations were only advanced to a depth of 40 feet in this area which was located outside of the northeast corner of the main facility

building. Extensive investigations were conducted in the vapor degreasing area formerly located within the Y-12 facility building. VOCs, primarily TCE and 1,1,1-TCA, were detected at concentrations of up to 590 ug/kg and 1,100 ug/kg, respectively. Boring CB-1 was drilled from the ground surface to approximately 91.5 feet below ground surface (bgs) in this area and TCE was detected in all but three of the 17 samples analyzed in this boring. Groundwater was encountered in boring CB-1 at approximately 90 feet bgs.

VOCs were also detected, but at significantly lower concentrations, in the vicinity of 1,1,1-TCA tank formerly located outside the western side of the building, the hazardous waste accumulation area north of the main building and near the electrostatic paint booth within the northwestern portion of the building (Figure 2). Based on the information currently available, these areas are not considered to be significant sources of residual VOC contamination.

2.5 FOCUS OF PROPOSED REMEDIATION

Because the former Y-12 facility is located within a known regional groundwater contamination plume and that the potential contribution of the facility, if any, to the Upper aquifer contamination is uncertain, the proposed remediation will address only VOC contamination of the semi-perched aquifer and residual VOCs in vadose zone soils beneath the facility. Remediation of residual VOCs in the vadose zone in recognized source areas will be addressed by soil vapor extraction (SVE) and the semi-perched zone will be effectively dewatered and treated by multi-phase extraction (MPE). The goal of this remediation effort is to mitigate residual contamination above the local aquitard and thereby mitigate potential future contribution to the regional VOC plume.

2.6 CSM SUMMARY

The following statements summarize the current framework of the CSM:

- Sandy soils are present from the ground surface to depths of between 50 and 70 feet bgs, followed by an interbedded transition zone of silts, clays and fine sands that is underlain by a 15 to 30 foot clay horizon that creates localized, semi-perched groundwater conditions.
- There are two primary and two secondary potential source areas for VOC contamination to soil and potentially groundwater at the former Y-12 facility. The primary source areas are the former quench tank and vapor degreasing areas. The secondary source areas are the waste management area and the former TCA tank area.
- Constituents of concern related to the former facility include primarily TCE, 1,1,1-TCA and their breakdown/transformation products.
- The relatively highest VOC concentrations are observed in shallow onsite wells screened within the transition zone and extending into the clay horizon of the semi-perched aquifer.
- Concentrations of VOCs in the Upper aquifer wells are generally low and similar to those observed in the regional plume monitoring data.
- The potential contribution of VOCs to the Upper aquifer from vadose zone and semi-perched groundwater contamination under the former facility is unproven based on the existing data.

SECTION TWO

Conceptual Site Model

- The most direct means of addressing facility-related groundwater contamination is to focus remediation on the vadose zone and water occurring in the semi-perched aquifer zone.

SECTION 3 REMEDIAL ALTERNATIVES EVALUATION

The purpose of this section is to identify, screen, and evaluate potential remedial alternatives to address vadose zone soil and semi-perched groundwater beneath the former Y-12 facility, where present, that are impacted with VOCs, primarily TCE and 1,1,1-TCA. Although numerical, site-specific cleanup objectives have not been established, this evaluation of alternatives was conducted to identify the most appropriate remedy for the remediation of VOCs in vadose zone soil and semi-perched groundwater to mitigate potential risks to deeper regional aquifers that underlies the site. Final remedy selection and design will be completed based on the results of the pre-design characterization work and the results of a pilot study recommended in this section.

Each of the identified alternatives is screened individually relative to established criteria. Selected alternatives are then evaluated separately and compared to each other on the basis of established criteria and the most appropriate remedy is selected, again, subject to verification with completion of the pre-design characterization and recommended pilot test.

3.1 IDENTIFICATION AND SCREENING OF REMEDIATION ALTERNATIVES

Preliminary identification and screening of remedial alternatives was conducted by URS, representatives of Northrop and other selected technical consultants. Remedial alternatives were identified based primarily on previous or published experience with relevant technologies and, accordingly, screened based on their expected effectiveness at this site, implementability, and cost. These screening criteria are defined as follows:

- *Effectiveness*, with primary consideration of the ability of the alternative to meet expected cleanup objectives (e.g. mitigation of potential threats to the regional aquifer).
- *Implementability*, with primary consideration of the technical and administrative feasibility of and availability of necessary equipment and personnel for implementation. This criterion also includes consideration of site access and expected state and community acceptance.
- *Cost*, including both capital and present value of operation and maintenance (O&M) costs, as applicable.

Several potential remedial alternatives were identified and evaluated as part of the remedy screening process. Identification and screening was based on URS' and the other technical consultants experience at other sites with similar conditions and published case-studies and guidelines. Remedial alternatives considered for this site included soil vapor extraction (SVE), multi-phase extraction (MPE, including two-phase extraction [TPE] and dual-phase extraction [DPE]), in-well stripping, groundwater pump and treat, *in situ* chemical oxidation (ISCO), and excavation/large diameter auger (excavation). Air sparging was also considered in preparation of this report.

Although in-well stripping can simultaneously address both vadose zone soils and groundwater, it was eliminated for further consideration because of the inconsistent extent and thickness of groundwater occurring in the semi-perched groundwater zone. Groundwater pump and treat was eliminated because of the typically high cost, limited performance, and likely low volume of water that can be extracted from the semi-perched groundwater zone. Also, pump and treat must be combined with other technologies to address the vadose zone soils. ISCO was eliminated as insufficient site data is available to fully assess its

potential effectiveness and because it would also have to be combined with other technologies to address the vadose zone soils. Implementation is also complicated by the inconsistent extent and thickness of groundwater occurring in the semi-perched zone. Excavation was eliminated because of the depth to the groundwater, difficulties associated with excavating beneath an existing building (e.g., risk to structure and interference with current site operations), and expected high cost for implementation. Air sparging was eliminated because of heterogeneous lithology and limited thickness of the semi-perched groundwater zones with the resulting limitation in developing effective sparge air distribution.

SVE and MPE were carried forward for further evaluation, with SVE being implemented to address impacted vadose zone soils where VOCs may occur above the semi-perched groundwater zone. MPE, which includes SVE, would be implemented at locations requiring remediation of semi-perched groundwater. Vadose zone soils would be addressed simultaneously with MPE.

SVE is identified by EPA as a presumptive remedy for VOCs in vadose zone soils (EPA, 1993 and 1993). Similarly, MPE is identified by EPA as a presumptive remedy for VOCs in vadose zone soils and groundwater (EPA, 1997). The presumptive remedy approach provides an expedited remedy selection process acknowledging past performance of certain technologies in addressing common categories of contaminants and site conditions (EPA, 1993). In this approach, the preferred presumptive remedy need only be compared to the No Action alternative. Accordingly, the following remedial alternatives were selected for evaluation:

- Alternative 1 – No Action
- Alternative 2 – Soil Vapor Extraction/Multi-phase Extraction

SVE and MPE are combined into one alternative, with MPE implemented based on the occurrence of the semi-perched groundwater.

3.2 DESCRIPTION AND EVALUATION OF REMEDIAL ALTERNATIVES

Although the EPA presumptive remedy approach identifies SVE/MPE as an appropriate technology for remediation of VOCs in soil and groundwater, this section was prepared to provide a description of each remedial alternative selected for evaluation, provide specific rationale for the selection of each alternative for evaluation, and a description of the technology as it applies to this site. This section also provides an evaluation of each remedial alternative compared to nine criteria for feasibility studies defined in Section 300.430 (e) (9) (iii) of the U.S. Environmental Protection Agency (EPA) National Oil and Hazardous Substances Pollution Contingency Plan, or NCP (USEPA, 1990). These nine criteria are identified and described as follows:

1. *Short-term effectiveness* – This criterion evaluates the effects of the remedial alternative during the construction and implementation phase until remedial objectives are met. It accounts for the protection of workers and the community during remedial activities, and environmental impacts from implementing the action.
2. *Long-term effectiveness and permanence* – This criterion addresses issues related to the management of residual risk remaining onsite after a remedial action has been performed and has met its objectives. The primary focus is on the controls that may be required to manage risk posed by treatment residuals and/or untreated wastes (e.g., continued groundwater monitoring).

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3. *Reduction of toxicity, mobility, or volume* – This criterion evaluates whether the remedial technology employed results in significant reduction in toxicity, mobility, or volume of the hazardous substances.
4. *Implementability* - This criterion evaluates the technical and administrative feasibility of the alternatives, as well as the availability of the necessary goods and services. This includes the ability to construct and operate an alternative, ability to obtain services, and equipment, ability to monitor the performance and effectiveness of technologies, and the ability to obtain necessary approvals from agencies.
5. *Overall protection of human health and the environment* – This criterion evaluates whether the remedial alternative provides adequate protection to human health and the environment.
6. *Cost* – This criterion involves capital and operation and maintenance cost and is based on a variety of information. The actual costs will depend on true labor and material cost, competitive market conditions, final project scope, including defined lateral and vertical extent of contamination identified during the pre-design site characterization work, and the implementation schedule.
7. *State Acceptance* – This criterion involves consideration of the involved regulatory agency acceptance of a remedial alternative.
8. *Community Acceptance* – This criterion involves consideration of the likelihood of community acceptance or concerns regarding implementation of a particular remedial alternative.
9. *Applicable or Relevant and Appropriate Requirements (ARARS)* – This criterion involves an evaluation of location-specific, chemical-specific, and action-specific ARARS.

Each remedial alternative is evaluated individually on these criteria and in comparison to other alternatives.

3.2.1 Alternative 1 – No Action

In accordance with NCP and CERCLA, as amended, Alternative 1 has been included to provide a baseline for comparison to other remediation alternatives. This alternative includes no institutional controls, no treatment of soil or groundwater, and no monitoring. No cost is associated with this alternative.

3.2.1.1 Evaluation

1. *Short-term effectiveness* – Because no remedial actions are undertaken, protection of workers or the community during implementation are not required. Cleanup objectives, however, are not met.
2. *Long-term effectiveness and permanence* – Because no remedial actions are undertaken and cleanup objectives are not achieved, long-term effectiveness and permanence are not achieved and risks are not reduced.
3. *Reduction of toxicity, mobility, or volume* – Because no remedial actions are undertaken, toxicity, mobility, and volume are not reduced.

4. *Implementability* – Because no remedial action is undertaken, there are no restrictions on implementability. However, agency approval would not be granted because cleanup objectives are not achieved.
5. *Overall protection of human health and the environment* – Reduction in human health risk is not achieved because soil and semi-perched groundwater impacted with VOCs are not remediated.
6. *Cost* – There is essentially no cost in implementation of this alternative.
7. *State Acceptance* – Because cleanup objectives are not achieved and human health risk is not reduced, involved agencies would not be expected to accept this alternative.
8. *Community Acceptance* – Because cleanup objectives are not achieved and human health risk is not reduced, involved agencies would not be expected to accept this alternative.
9. *ARARs* – Because cleanup objectives are not achieved and human health risk is not reduced, ARARs would not be met.

3.2.2 Alternative 2 – Soil Vapor Extraction/Multi-phase Extraction

SVE and MPE are combined into one alternative, with MPE implemented based on the occurrence of the semi-perched groundwater. In impacted areas with no semi-perched groundwater, SVE wells would be constructed to facilitate extraction of soil vapor from vadose zone soils. In impacted areas with semi-perched groundwater, MPE wells would be constructed to facilitate the simultaneous extraction of groundwater and soil vapor. Extracted soil vapor and groundwater would be transferred to a combined treatment system for treatment prior to discharge, as described below.

SVE is a developed technology and recognized as the preferred presumptive remedy for the remediation of VOCs in soil (USEPA, 1993). SVE involves removal of VOCs from impacted soils with extracted soil vapor by applying a vacuum to extraction wells, constructed within the aerial boundary of the impacted soil at the Site, using a blower and interconnecting piping. The SVE wells typically consist of slotted PVC casing installed in a vertical wellbore and/or horizontal trench. Wellfield design is based on economic optimization of the number and location of wells (vertical or horizontal) necessary to appropriately intercept and remediate impacted soil in areas exceeding cleanup objectives. A schematic diagram of a typical SVE system is provided as Figure 5, as part of the SVE/MPE system.

For this site, URS expects that SVE wells would be constructed from land surface to the top of the clay aquitard, at a total depth of approximately 80 to 90 feet bgs. Cluster wells may be required to address the variability in lithology from ground surface to total depth with a generally decreasing permeability. Cluster wells provide a means of segregating extraction from comparatively high (e.g., sand) and low (e.g., silt and clay) permeability soils thus minimizing preferential flow from high permeability soils. In general this distinction occurs at approximately 60 feet bgs (see Figures 3 and 4).

The extracted soil vapor is treated before discharge to the atmosphere typically using vapor phase carbon adsorption (VPCA) or thermally, using a catalytic oxidizer (for chlorinated VOCs). The SVE system would remove the VOCs within the vadose zone by creating movement of air through the impacted soil. As the air passes through the impacted soil, VOCs volatilize from the liquid to the vapor phase. The VOCs are destroyed or removed from the off-gas of the vacuum unit by a thermal oxidizer or using VPCA, respectively. Regular monitoring of the SVE system includes measuring the concentrations of VOCs in the soil vapor stream as it is

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removed from the extraction wells and from effluent stream from the vapor treatment unit. Given the comparatively low known concentrations of VOCs in subsurface soils, VPCA would likely be used for vapor treatment.

Pilot testing of SVE is typically conducted to obtain data necessary for detailed wellfield design (e.g., radius of influence), equipment selection (e.g., initial concentrations and soil vapor flowrates), and optimization of the design of a full-scale SVE.

MPE is a developed technology and recognized as the preferred presumptive remedy for the remediation of VOCs in groundwater (USEPA, 1997). MPE, a variation of SVE, provides for simultaneous extraction of groundwater and soil vapor. Using MPE, soluble VOCs present in groundwater are extracted from the subsurface in groundwater and are also removed in soil vapor as described for SVE, above. Groundwater extraction typically results in lowering of the groundwater table thus exposing additional soil to SVE and expediting remediation.

Two typical variations of MPE are TPE and DPE. TPE uses a high vacuum pump, typically operating at 18 to 25 inches of mercury (Hg), to extract both soil vapor and groundwater from an extraction well. Soil vapor extraction is accomplished as described above. Groundwater extraction is accomplished by applying the vacuum to a small diameter suction tube that is positioned within the well casing with the end located in groundwater. Depending on site conditions and extraction well design, groundwater may be extracted as a stream through the tube or as an entrained liquid for groundwater at depths exceeding approximately 25 feet bgs. The resulting turbulence in the entrained water stream also results in transfer of VOCs from the liquid phase to the vapor phase – again improving system performance. Additionally, extraction wells can be easily configured for either SVE-only or TPE use with the simple addition of the suction tube. This would provide great flexibility in operation and in minimizing cost. In DPE, a pump is used to extract groundwater instead of a suction tube. The pump may be pneumatically or electrically operated. Because of the limited occurrence and thickness of the semi-perched groundwater, however, use of a pump is not expected to be cost effective or provide substantially improved performance over TPE. Accordingly, URS expects that TPE would be most appropriate for this site. Figure 5 is provided to illustrate the configuration of the proposed SVE/MPE system.

The vapor and liquid streams from the extraction wells are transferred in collection system piping to an inlet separator to separate the vapor stream for treatment in the vapor treatment system prior to discharge to the atmosphere and the liquid stream for treatment in a liquid treatment system, prior to discharge. Given the known concentrations of VOCs in the semi-perched groundwater, liquid phase carbon adsorption (LPCA) is expected to be selected for treatment of extracted groundwater.

Treated groundwater from a MPE system is typically discharged to the storm drain system under an NPDES permit issued by the RWQCB or possibly re-injected. Sanitary sewer discharge of treated groundwater may also be allowed under a Special Purpose Discharge permit issued by the sanitary sewer operating authority. Pilot testing of MPE is recommended to evaluate groundwater production rates and obtain other data necessary for full-scale design.

Startup and operation of the SVE/MPE system involves periodic sampling and analysis of extracted soil vapor and groundwater influent and effluent streams and recording key operational data. System operation also includes periodic optimization, maintenance, and reporting.

The time required to operate the SVE/MPE system would be evaluated after completion of the pre-design site characterization and finalization of cleanup objectives for the site. During operation, the SVE/MPE system would require regular system maintenance, system performance monitoring, sampling of the extracted soil vapor and groundwater, and sampling of the treated soil vapor and groundwater. System O&M is normally continued until cleanup objectives are met or until concentration of VOCs in the extracted soil vapor and groundwater reach asymptotic levels and the rate of mass reduction is considered minimal. This would be an indication that the system has been operated to the approximate limits of its effectiveness and continued operation would not result in an appreciable reduction in concentrations of VOCs.

After operational data and confirmation samples indicate that the cleanup objectives have been achieved or asymptotic performance has been reached, a closure report is prepared to document system performance and rationale for closure. For this site, confirmation sampling may consist of soil vapor and groundwater sampling and analysis for VOCs for comparison to cleanup objectives. After agency concurrence that cleanup objectives have been achieved, the system is demobilized and the extraction wells properly abandoned.

3.2.2.1 Evaluation

1. *Short-term effectiveness* – Issues related to short-term effectiveness (e.g., protection of workers and the community) can be addressed by engineering controls during construction and O&M. Engineering controls include monitoring ambient VOC concentrations during drilling operations and shutting down or application of vapor suppressant, if health based criteria are exceeded. Engineering controls during O&M include operation and monitoring of vapor and groundwater treatment equipment.
2. *Long-term effectiveness and permanence* – Long-term effectiveness and permanence is provided by removal of VOCs from the vadose zone soil at the Site through vapor extraction and VPCA treatment of groundwater through groundwater extraction and LPCA treatment. VPCA and LPCA units are typically transported off-site for regeneration or thermal destruction at a properly licensed facility. Extracted groundwater and water entrained with the extracted soil vapor, recovered in the inlet scrubber, would be treated prior to discharge to the storm drain, sanitary sewer, re-injection or offsite disposal.
3. *Reduction of toxicity, mobility, or volume* – Toxicity and mobility of the waste is reduced through reduction in the volume from the vadose zone soil and groundwater through soil vapor and groundwater extraction.
4. *Implementability* – In general, equipment and personnel necessary for implementation of SVE/MPE are readily available. Permits and authorizations necessary for extraction well and system construction and operation are typically readily available – although a Special Purpose Discharge permit may not be issued for long-term operation. Extraction well and collection system piping construction within the building, however, can be difficult due to limitations for access of drilling or construction equipment and system maintenance. In addition, NGSC has not yet negotiated access to the site with the current property owner for these activities.
5. *Overall protection of human health and the environment* – Given the demonstrated effectiveness of SVE/MPE in remediation of VOCs in vadose zone soil and groundwater, respectively, and VPCA and LPCA for vapor and water treatment prior to discharge, respectively, this alternative would be protective of human health and the environment.

6. *Cost* – The cost of implementation of SVE/MPE is typically considered “medium”, relative to other viable technologies. For this site, a cost estimate for full scale implementation has not been prepared, pending completion of the pre-design site assessment.
7. *State Acceptance* – State acceptance of SVE/MPE is expected because cleanup objectives can be met and human health risk can be reduced.
8. *Community Acceptance* – Community acceptance of SVE/MPE is expected because cleanup objectives can be met, human health risk is reduced, and short-term impacts can be controlled.
9. *ARARS* – ARARS for SVE/MPE can be met.

3.3 COMPARATIVE EVALUATION OF REMEDIAL ALTERNATIVES

This section provides a comparative evaluation of the two remedial alternatives based on their comparison to the nine evaluation criteria. Following the discussion of the comparative evaluation is a numerical ranking of alternatives based on the degree to which each alternative satisfies the evaluation criteria. This analysis is based on numerical rankings that assign values according to the following:

- A value of “3” is awarded if the alternative satisfies essentially all the elements of the evaluation criteria.
- A value of “2” is awarded if the alternative satisfies some of the elements of the evaluation criteria.
- A value of “1” is awarded if the alternative satisfies few or essentially none of the elements of the evaluation criteria.

With respect to cost, values are assigned relative to the lowest (“3”) to highest (“1”) total estimated cost (present value, where applicable). Alternatives with comparable overall performance are assigned the same value. Absent other controlling factors, the remedial alternative with the highest total rating (score) is considered to be the most appropriate.

3.3.1 Discussion

1. *Short-term effectiveness* – Alternative 1 poses no short-term risk in implementation as no remedial action is undertaken. Alternative 2 poses short-term risk associated primarily with construction of the SVE/MPE system, including noise, vapors, dust, or particulates that may be generated during drilling or construction activities. These risks could be mitigated, however, using personal protective equipment (PPE) for on-site workers and engineering controls, such as dust suppression and additional traffic control and equipment operating safety procedures, for protection of the surrounding community. During operation risk could be controlled by providing adequate vapor and groundwater treatment and monitoring of the extracted soil vapor and groundwater during operation of the SVE/MPE system.
2. *Long-term effectiveness and permanence* – Alternative 1 provides no long-term effectiveness and permanence as no active remediation is undertaken. Alternative 2 provide long-term effectiveness and permanence with extraction of impacted soil vapor and groundwater exceeding cleanup objectives.

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3. *Reduction of toxicity, mobility, or volume* – No reduction in toxicity, mobility, or volume is provided with Alternative 1. Toxicity, mobility, and volume of contamination at the Site would be reduced with removal and treatment of soil vapor and groundwater with concentrations of VOCs above cleanup objectives. Mobility and potentially, toxicity and volume, would be further reduced at the off-site treatment/disposal facility.
4. *Implementability* – Alternative 1 would not be implementable because agency approvals could not be obtained. Equipment, personnel, and materials necessary for implementation of Alternative 2 is widely available and necessary permits and authorizations could likely be obtained. Implementation would need to address building access and protection during construction and O&M.
5. *Overall protection of human health and the environment* – Alternative 1 does not provide protection of human health and the environment as elevated concentrations of VOCs would remain in site soils and groundwater. Alternative 2 provides suitable performance as long-term risks are reduced and human health and the environment are protected. Short-term risks can be controlled.
6. *Cost* – Alternative 1 can be implemented at essentially no cost. The cost for full-scale implementation of Alternative 2 has not been estimated, pending completion of the pre-design site assessment.
7. *State Acceptance* – Alternative 1 would not be accepted by the state because cleanup objectives are not achieved. Because of the ability to achieve cleanup goals with this alternative, state acceptance of Alternative 2 would be expected.
8. *Community Acceptance* – Alternative 1 would not be accepted by the community because cleanup objectives are not achieved. Because of the ability to achieve cleanup goals with this alternative, state acceptance of Alternative 2 would be expected.
9. *Compliance with ARARs* – Alternative 1 would not comply with ARARs. Alternative 2 would be expected to comply with ARARs.

3.3.2 Comparative Ranking

Based on the discussion provided above, score values for each of the criteria were assigned as follows:

Criteria	Alternative 1 – No Action	Alternative 2 – Soil Vapor Extraction
Short-term Effectiveness	3	2
Long-term Effectiveness and Permanence	1	3
Reduction of Toxicity, Mobility, and Volume	1	3
Implementability	1	3
Overall Protection of Human Health and the Environment	1	3
Cost	3	2
State Acceptance	1	3
Community Acceptance	1	3
Compliance with ARARs	1	3
Total Score	13	31

3.4 SELECTED REMEDIAL ALTERNATIVE

Based on the results of the comparative evaluation, Alternative 2 – Soil Vapor Extraction/Multi-phase Extraction is selected as the most appropriate remedy for addressing site soils and semi-perched groundwater impacted with VOCs at the site. Implementation of Alternative 2 would require conducting pilot testing of the technology, completion of the pre-design characterization, system construction, and O&M, including conducting an evaluation of system performance and closure sampling and analysis, as described below.

3.4.1 System Configuration

In general, the SVE/MPE system would consist of a series of SVE and MPE extraction wells, vapor and liquid collection system piping, a high vacuum blower unit, including inlet scrubber, and VPCA and LPCA units for vapor and water treatment, respectively. Until completion of the pre-design characterization work and pilot testing, however, the extraction wellfield and treatment system cannot be designed. A schematic diagram of the proposed SVE/MPE system is included as Figure 5.

However, based on the technical approach described in this document, URS expects that a series of nested, vertical SVE wells would be constructed in areas with residual VOCs present in the vadose zone. The screened intervals would be selected to target vadose zone soils impacted with VOCs at concentrations that pose a potential risk to groundwater. Screened intervals would also be selected to address major differences in lithology with depth, where present, to minimize preferential flow through high permeability soils. MPE would be constructed in a similar manner; however, a small diameter (estimated 1-inch nominal diameter) suction tube would be installed to extract the semi-perched groundwater.

Vacuum required for extraction of soil vapor and groundwater would be provided using a high vacuum, liquid ring pump. Valves would be provided at each extraction well to allow for adjustment and wellfield optimization. Sample ports would be provided at each extraction well to facilitate soil vapor and groundwater sampling and analysis and monitoring of vacuum levels.

The vapor and groundwater collection system piping would consist of a combination of above and below grade PVC piping to interconnect the extraction wells with the treatment system. The treatment system would consist primarily of the inlet separator, liquid ring pump, and VPCA and LPCA units. Individual VPCA and LPCA units would be connected in series and also equipped with sample ports. Treated soil vapor would be discharged to the atmosphere. Treated groundwater would likely be discharged to the storm drain system under an NPDES permit or to the sanitary sewer under a Special Purpose Discharge permit. Again, until the wellfield is designed, the pump and treatment units cannot be selected.

3.4.2 Permitting

Permits for construction (and abandonment after completion) of the SVE/MPE wells will be obtained as required. A permit for construction and operation of the vapor treatment system, expected to use VPCA, will be required from the South Coast Air Quality Management District (SCAQMD). A permit for discharge of treated groundwater will be required. If discharge to the sanitary sewer is acceptable, a Special Purpose Discharge Permit will be required. If discharge to the sanitary sewer is not possible, an

NPDES permit will be obtained from the RWQCB if the volume of treated water is sufficient to warrant this form of discharge. If water volumes are low, offsite disposal may be performed. Re-injection of the treated groundwater is not expected to be selected. Additionally, a building permit will be required from the City of Anaheim for general electrical, structural, and mechanical work associated with construction of the soil vapor and groundwater collection and treatment systems.

3.4.3 Operation and Maintenance

In preparation for operation, the SVE/MPE system will be inspected, rotating equipment will be lubricated, and operation tested. After start-up, operational data, including soil vapor and groundwater flowrate, influent and effluent concentrations of VOCs, vacuum levels, and liquid levels will be recorded and the system inspected on an approximate weekly basis. During operation, extraction well valving may be periodically adjusted to optimize VOC removal and system performance. Influent and effluent concentrations in the vapor stream are typically measured using a field instrument, or photo-ionization detector (PID).

Routine maintenance will include periodic replacement of vacuum pump lubricating oil, greasing the blower electrical motor, and general housekeeping. Other maintenance work would also include change-out of the VPCA and LPCA units. VPCA and LPCA unit change-outs are required after effluent concentration data indicates that breakthrough is occurring.

During operation, quarterly system performance reports will be prepared. These reports will summarize key operational data; especially estimated mass removal and influent concentrations. Quarterly reports will also be prepared and submitted to the SCAQMD.

3.4.4 Closure Sampling and Analysis

During operation, performance data will be evaluated to verify expected decreasing, asymptotic concentrations of VOCs in the extracted soil vapor and groundwater. Based on review of the performance data collected during a minimum O&M period of approximately 6 to 12 months, and in consultation with the RWQCB, soil vapor and groundwater sampling would be conducted to determine if cleanup objectives have been met and operations can be ended.

If cleanup objectives are met, a closure report will be prepared and submitted to the RWQCB and the SVE/MPE system will be removed. The closure report will be prepared to summarize remediation activities and system performance and present the results of closure sampling and rationale for site closure.

3.4.5 System Demobilization

After verification that cleanup objectives have been achieved, the SVE/MPE system will be properly demolished and removed from the Site. Activities will include proper abandonment of the SVE/MPE wells under applicable permits and procedures, removal and off-site regeneration or disposal of the VPCA and LPCA units at a properly licensed facility, transportation and proper disposal of any other hazardous or non-hazardous wastes (e.g., residual knock-out vessel liquids, trash, construction debris), and removal of all above-

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ground piping and equipment. The fence surrounding the treatment equipment will also be removed. Wastes will be transported and disposed of under appropriate waste manifests.

SECTION 4 PILOT TEST WORKPLAN

Prior to completing the design and implementation of a full-scale SVE/MPE system, pilot testing is recommended. The data obtained from the pilot test, as well as any additional pre-design characterization work, will be used as a basis to design the full-scale system. This section describes the objective, scope, and requirements for a proposed pilot test of SVE/MPE at the site.

4.1 PILOT TEST OBJECTIVES

The general objective of the pilot test is to obtain performance data during operation of a pilot-scale SVE/MPE system to be used in verifying the selection of SVE/MPE as the most appropriate remedial alternative and to obtain data for use in design of a full-scale system to achieve site cleanup objectives. More specific objectives of the pilot test are identified as follows:

1. Estimate the rate of soil vapor and groundwater extraction from NMW-2A.
2. Measure the concentration of VOCs in the extracted soil vapor and groundwater.
3. Estimate the mass removal rate of VOCs in the extracted soil vapor and groundwater.
4. Estimate the radius of vacuum influence (ROI) within the sandy zone (0 to 70 feet bgs) and within the semi-perched zone.
5. Evaluate the possible impact to groundwater levels measured in new monitoring wells, during the short duration pilot test period.
6. Evaluate the performance of SVE/MPE at varying vacuum levels.
7. Evaluate the effectiveness of TPE in remediation using SVE/MPE.
8. Identify key design parameters for design of a full-scale SVE/MPE system.

4.2 PILOT TEST WELLFIELD**4.2.1 Extraction Well**

The proposed pilot test is designed to use existing groundwater monitoring well NMW-2A, currently used to monitor the semi-perched groundwater to the east of Building Y-12, as the MPE extraction well. NMW-2A was constructed to a total depth of approximately 95 feet bgs with slotted screen placed between 85 and 95 feet bgs. NMW-2A is included in the geologic cross section illustrated in Figures 3 and 4.

Groundwater elevation measured in this well was reported at 89.59 feet bgs during the most recent groundwater monitoring event conducted on June 7, 2004. Well NMW-2A, along with well NMW-5A, are the only semi-perched zone wells that consistently contain measurable levels of groundwater. The concentration of TCE in groundwater samples collected from NMW-2A has varied from ND to 960 ug/L, and was reported as 230 ug/L during the groundwater monitoring event conducted on April 6, 2004.

This well location was selected for pilot testing of SVE/MPE based on the consistent presence of semi-perched, VOC-impacted groundwater, suitable well screen interval, and accessibility, given its location outside of Building Y-12 and corresponding minimal impact to ongoing site operations during the pilot test.

The depth of the screened interval in this well will facilitate combined SVE/MPE pilot testing of the predominantly clayey and relatively consistent confining layer (occurring approximately 70 to 100 feet bgs) with the installation of a 1-inch diameter suction pipe and corresponding wellhead fittings and mobilization of appropriate pilot test equipment, as described in this section. Approximately 5 feet of the 100 foot well screen is located in vadose zone soil, above the most recently reported groundwater elevation. However, the configuration of this well will not facilitate SVE testing of the upper, more permeable vadose zone soils from approximately 0 to 70 feet bgs. SVE testing of this interval will be accomplished using the proposed new monitoring wells described below. Because of the depth of the groundwater (greater than 25 feet), groundwater will only be extracted as entrained with soil vapor flow in the suction tube using TPE. This arrangement is expected to be suitable as the rate of groundwater extraction is expected to be comparatively low.

4.2.2 Monitoring Wells/SVE Test Wells

To evaluate the performance of monitoring well NMW-2A under SVE/MPE, a group of three nested monitoring/SVE wells will be constructed at varying distances (approximately 10, 30, and 60 feet) from NMW-2A. These wells will be designated NMW-11, 12, and 13. Then actual locations will be selected based on site access limitations. The lower screened interval in these wells will be used for measurement of groundwater levels and vacuum to facilitate estimating radius of influence of SVE in the clayey confining layer (approximately 70 to 100 feet bgs). The upper screened interval will be used primarily for pilot testing and monitoring of SVE of the upper more permeable vadose zone soils (approximately 0 to 70 feet bgs). Additionally, these wells will also be beneficial in delineating the extent of impacted semi-perched groundwater. These wells may also be used as part of the full-scale SVE/MPE remediation system. A schematic diagram illustrating the construction of these proposed monitoring wells is provided as Figure 6.

The new monitoring wells will be constructed using a hollow stem auger drill rig to a total depth of approximately 95 feet bgs, similar to NMW-2A. The upper screened interval will be completed from approximately 30 to 70 feet bgs, targeting the expected more permeable soil in the upper vadose zone and representative of shallow soil conditions in Building Y-12. The lower screened interval will be completed between approximately 80 to 95 feet bgs, targeting the possible semi-perched groundwater and vadose zone soils in this interval.

Prior to construction, URS will contact Underground Service Alert (USA) at least 24 hours before drilling operations to locate possible underground utilities. URS will also review available facility drawings and use a subcontract utility locating company to assist in locating possible underground utilities.

4.3 SVE/MPE TEST EQUIPMENT

The pilot test will be conducted using a mobile, rental SVE/MPE pilot test unit, available from a variety of suppliers in the Los Angeles and Orange County areas. The unit will consist primarily of a vacuum

blower (likely a liquid ring pump) capable of extracting up to 250 standard cubic feet per minute (SCFM) of soil vapor at a vacuum of up to 25 inches of mercury. Ideally, the unit will be provided with a various locations permit issued by the SCAQMD with vapor treatment using VPCA. VPCA will consist of two suitably sized granular activated carbon (GAC) units arranged in series and equipped with valved sample ports to facilitate soil vapor sampling and vacuum measurement.

The unit will also be equipped with an inlet scrubber used to separate the vapor and liquid stream. The liquid (groundwater) stream will be pumped from the scrubber to a storage tank. Accumulated groundwater will be periodically transported off-site for treatment and disposal at a licensed facility, under an appropriate hazardous waste manifest.

Initially, the pilot test unit will be connected to monitoring well NMW-2A to evaluate the performance of MPE in extraction of groundwater and soil vapor from the semi-perched zone. Connections will be made using PVC piping temporarily routed along the surface. As a second phase, the pilot test unit will be connected to the upper screened interval of one of the new monitoring wells to evaluate the performance of SVE above the semi-perched zone. Wells not connected to the pilot test unit during testing will be monitored as described later in this section.

To operate the liquid ring pump and the control system, temporary electrical power will be obtained from existing service in Building Y-12. Alternatively, a portable generator will be mobilized to the site. A schematic diagram of the pilot test system is included as Figure 5.

4.4 SVE/MPE TEST PROCEDURE

4.4.1 MPE Pilot Test

1. Permit and construct new monitoring wells NMW-11, NMW-12, and NMW-13. Conduct initial monitoring of the new wells as well as NMW-2A.
2. Obtain SCAQMD permit for operation of the pilot test system, if pre-permitted equipment is not available.
3. Mobilize and assemble pilot test equipment, including temporary connection to electrical power.
4. Install suction tube in NMW-2A and connect well to the pilot test system.
5. Begin operation of the pilot test system and adjust operation to apply a vacuum of approximately 10 inches Hg. Stabilize the vacuum measured in NMW-2A, continue to operate for a minimum period of approximately 3 hours, longer if vacuum response in adjacent monitoring wells has not stabilized.
6. During the 3 hour test period, record vacuum levels in NMW-2A and each of the three new monitoring wells within the first 5 minutes of operation, every 15 minutes thereafter. Record the soil vapor and groundwater extraction flowrate and concentration of VOCs in the extracted soil vapor from NMW-2A at the same interval. VOC concentrations will be measured using a PID. Collect samples of extracted soil vapor and groundwater for laboratory analysis for VOCs during the pilot test – one at approximately 30 minutes and one at approximately 3 hours, near the end of the pilot test. Measure and record groundwater elevations in NMW-2A and each of the new

monitoring wells after 15 minutes of operation and every 30 minutes thereafter, during the pilot test. Measure and record the total volume of groundwater extracted as an entrained liquid at the completion of the test period.

7. Conduct monitoring, sampling, and laboratory analysis of the treated soil vapor, as specified in the SCAQMD permit.
8. The following day, repeat the test procedure at approximately 24 inches Hg, or the maximum attainable by the pilot test system.

If the use of the suction tube is deemed ineffective in extracting groundwater at depth during testing, pilot testing described above may be repeated using a pneumatic or electrically operated pump, as DPE.

4.4.2 SVE Pilot Test

1. Connect the pilot test system to the shallow screened interval of NMW-11.
2. Begin operation of the pilot test system and adjust operation to apply a vacuum of approximately 10 inches Hg. Stabilize vacuum and operate for a minimum period of approximately 2 hours, longer if vacuum response in adjacent monitoring wells has not stabilized.
3. During the 2 hour test period, record vacuum levels in NMW-11, NMW2A, and each of the other two new monitoring wells within the first 5 minutes of operation and every 15 minutes thereafter. Record the soil vapor extraction flowrate and concentration of VOCs in the extracted soil vapor at the same interval. VOC concentrations will be measured using a PID. If VOCs are detected in the extracted soil vapor using the PID, collect samples of extracted soil vapor for laboratory analysis for VOCs during the pilot test – one at approximately 30 minutes and one at approximately 2 hours, near the end of the pilot test. Measure and record the total volume of water that may have been extracted as an entrained liquid during testing.
4. Conduct monitoring, sampling, and laboratory analysis of the treated soil vapor, as specified in the SCAQMD permit.
5. Approximately 1 hour after completing the test described above, repeat steps 2 and 3 at a vacuum level of approximately 20 inches Hg.
6. Approximately 1 hour after completing the test described above, connect to the deeper screened interval of NMW-11 and repeat steps 2 and 3.

4.5 DATA ANALYSIS AND INTERPRETATION

The rate of mass removal will be estimated using the measured rates of soil vapor and groundwater extraction multiplied by the average or final concentrations of VOCs detected in laboratory samples collected during testing. The rate of mass removal for each vacuum level tested, together with estimated full-scale capital and O&M costs for each test case; will be compared to optimize equipment selection and operating parameters for a full-scale system. Similarly, the ROI in the vadose zone will be estimated for each SVE test vacuum and will be used to optimize SVE wellfield design, equipment selection, and operating parameters. The ROI is estimated as the distance at which a sufficient level of vacuum will be present to induce airflow – typically considered approximately 0.1 inches water or 10 percent of the applied vacuum at the extraction well.

The full-scale vapor treatment system will be designed using the estimated total rate of soil vapor extraction from the proposed extraction wellfield and expected maximum combined concentration of VOCs in the extracted soil vapor. Design will include confirmation of using VPCA and in sizing the VPCA units. Similarly, the estimated total rate of groundwater extraction from the proposed extraction wellfield and expected maximum concentration of VOCs in the extracted groundwater will be used to design the liquid treatment system. Design will include confirmation of using LPCA for treatment and sizing of the LPCA units as well as a comparative economic analysis of possible off-site treatment and disposal. Off-site treatment and disposal may be more cost-effective if the quantities of groundwater extracted are comparatively low.

4.6 REPORTING

A report will be prepared to summarize the results and present the evaluation of the pilot test data, including verification of the suitability of using SVE/MPE to address vadose zone soils and the semi-perched groundwater. The report will also include recommendations for full-scale design, to be used in conjunction with the pre-design site characterization data.

A data report will also be prepared and submitted to SCAQMD to document the performance of the vapor treatment system during testing.

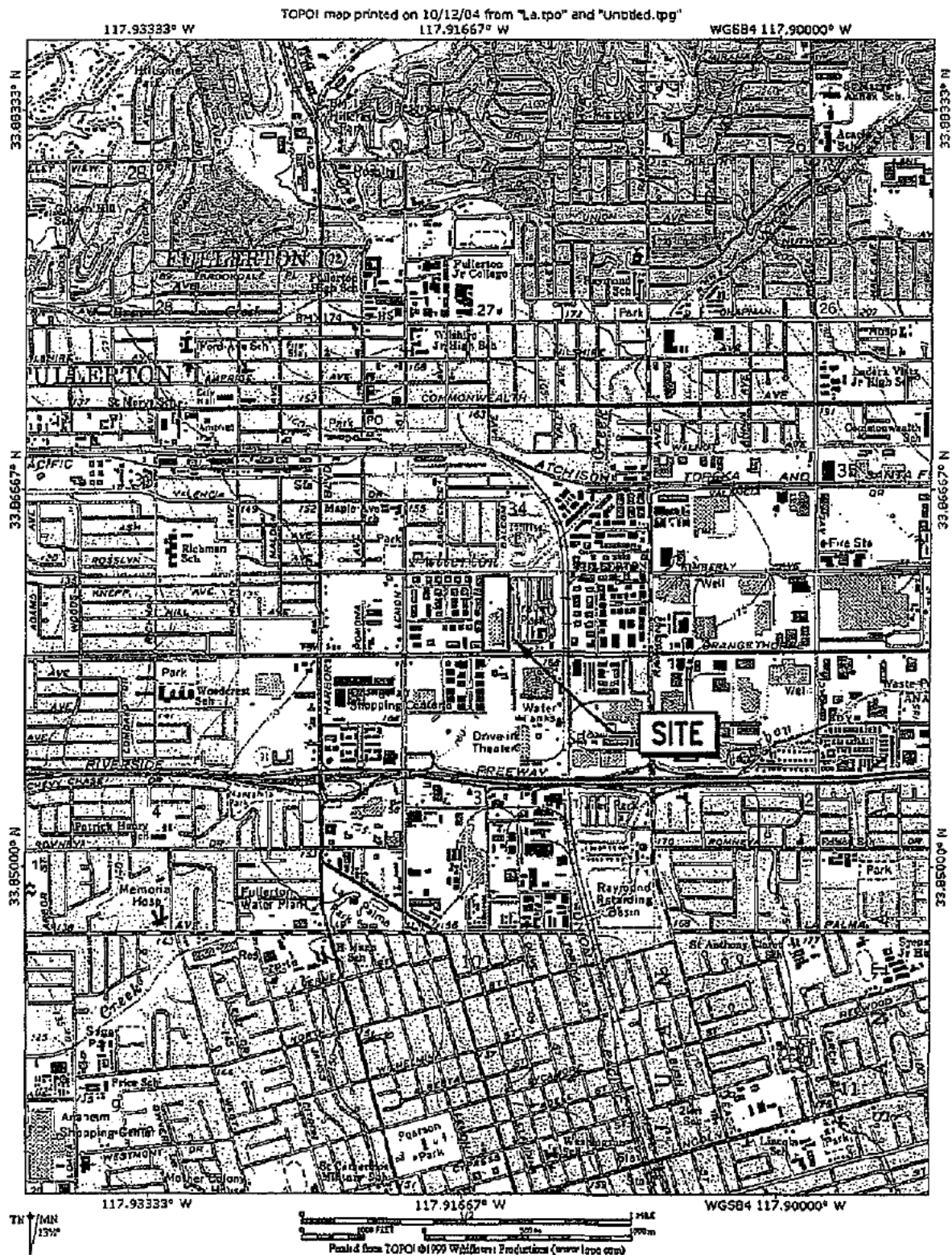
4.7 SCHEDULE

Upon receiving authorization to proceed, field preparation and well permitting can be completed within approximately 3 to 6 weeks. Construction of the new monitoring wells, to be used for pilot testing and likely as part of a full-scale SVE/MPE system, can be completed within approximately 1 to 2 weeks of receiving permits. The pilot test equipment can be mobilized and assembled during this same period. Pilot testing is planned to be conducted within an approximately 3 day period, as detailed in Section 4.4. The summary report can be completed within approximately 2 to 3 weeks after completion of the field testing work and receipt of analytical data.

SECTION 5 REFERENCES

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- USEPA 1997. Presumptive Remedy: Supplemental Bulletin Multi-phase Extraction (MPE) Technology in Soil and Groundwater, USEPA Office of Solid Waste and Emergency Response, Washington D.C., EPA 540-F-97-004, PB97-963501, April 1997.
- Herndon, R. L., 1992. Hydrogeology of the Orange County Groundwater Basin – An Overview. 1992
- Orange County Water District, 1991. Phase I Hydrogeologic Investigation of Chlorinated VOC Contamination in the Anaheim/Fullerton Area. May 1991.
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Figures



**SITE VICINITY MAP
FORMER Y-12 FACILITY
NORTHROP GRUMMAN CORPORATION
ANAHEIM, CALIFORNIA**

URS

TO TO SCALE

CHECKED BY:

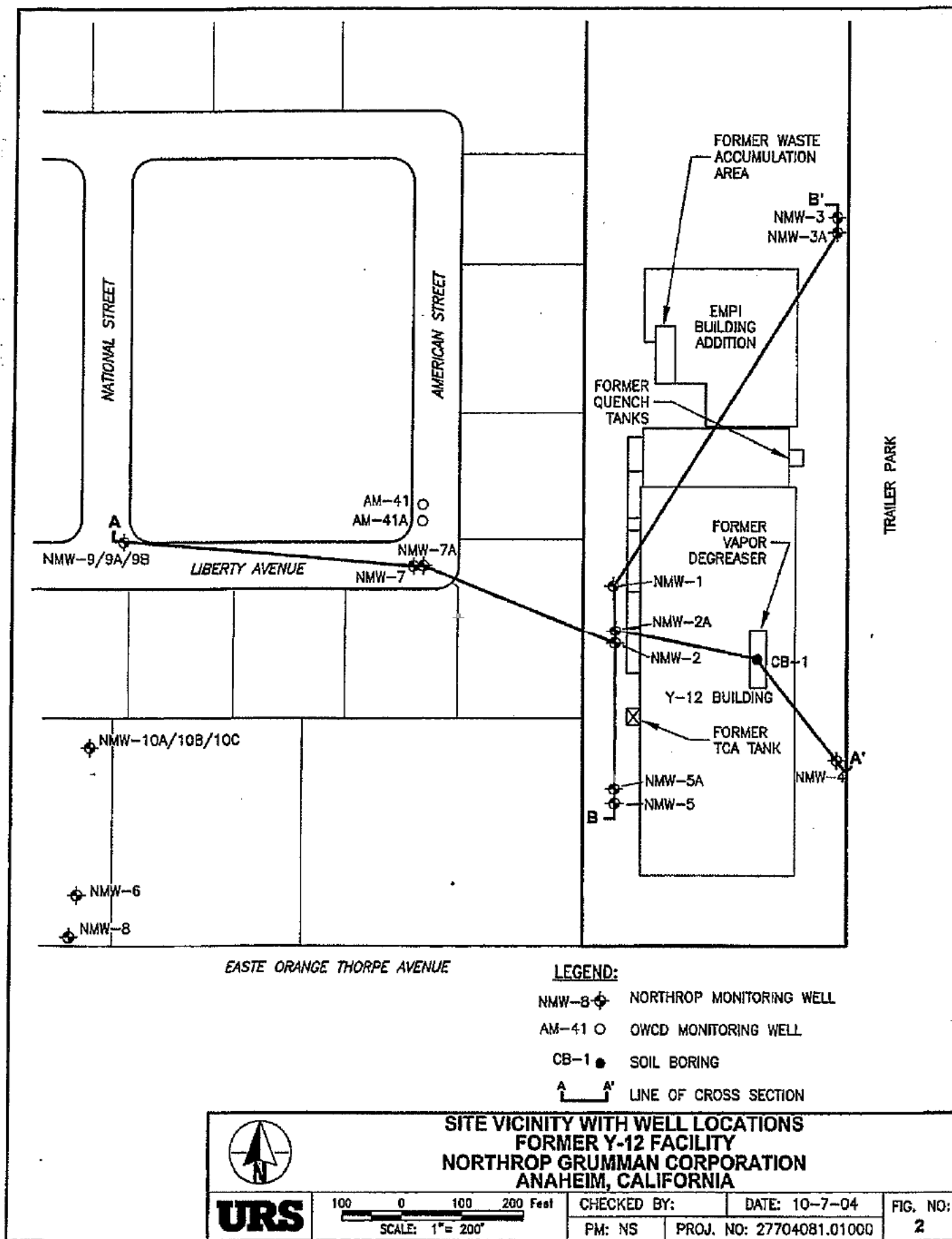
DATE: 10-12-04

FIG. NO:

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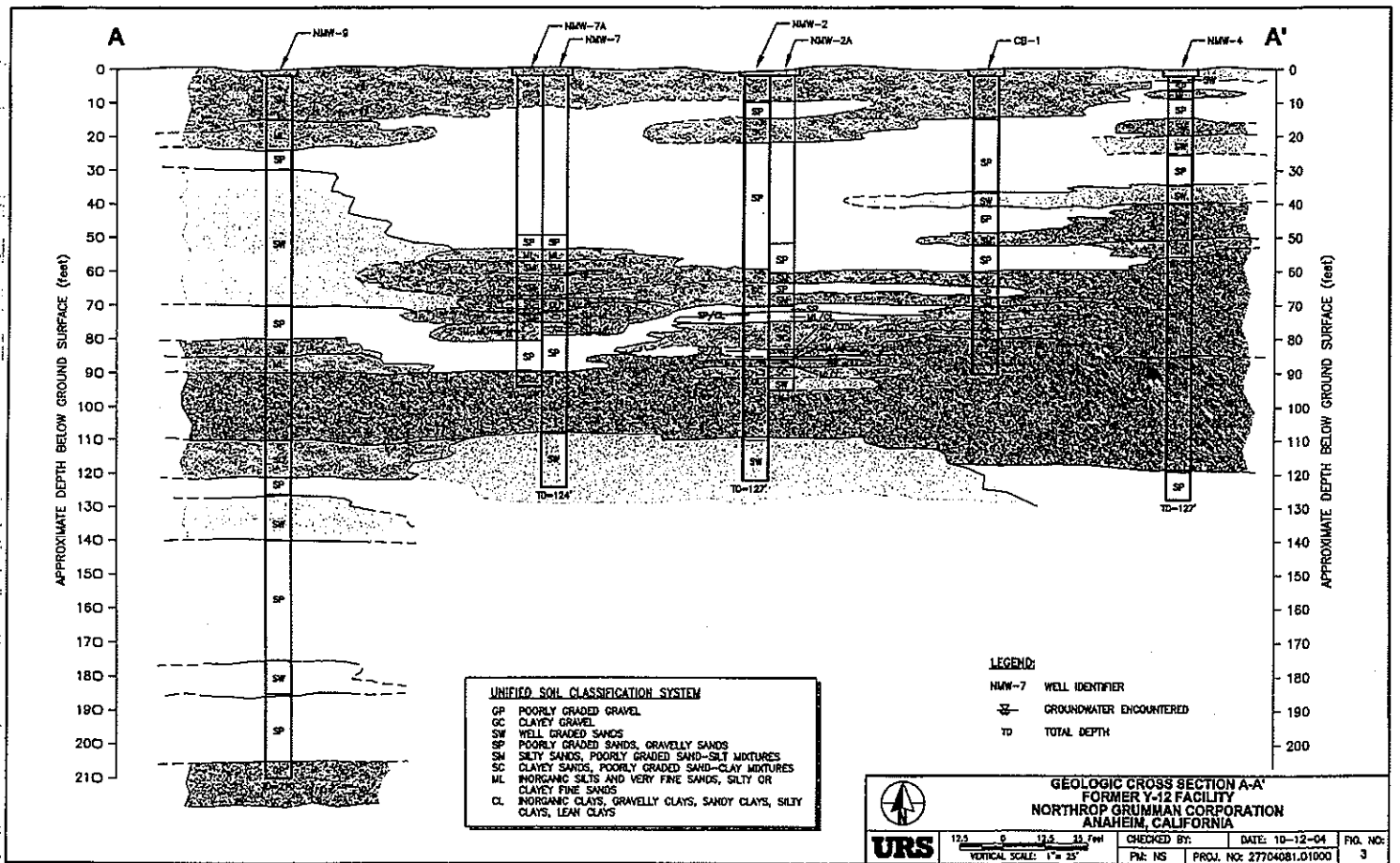
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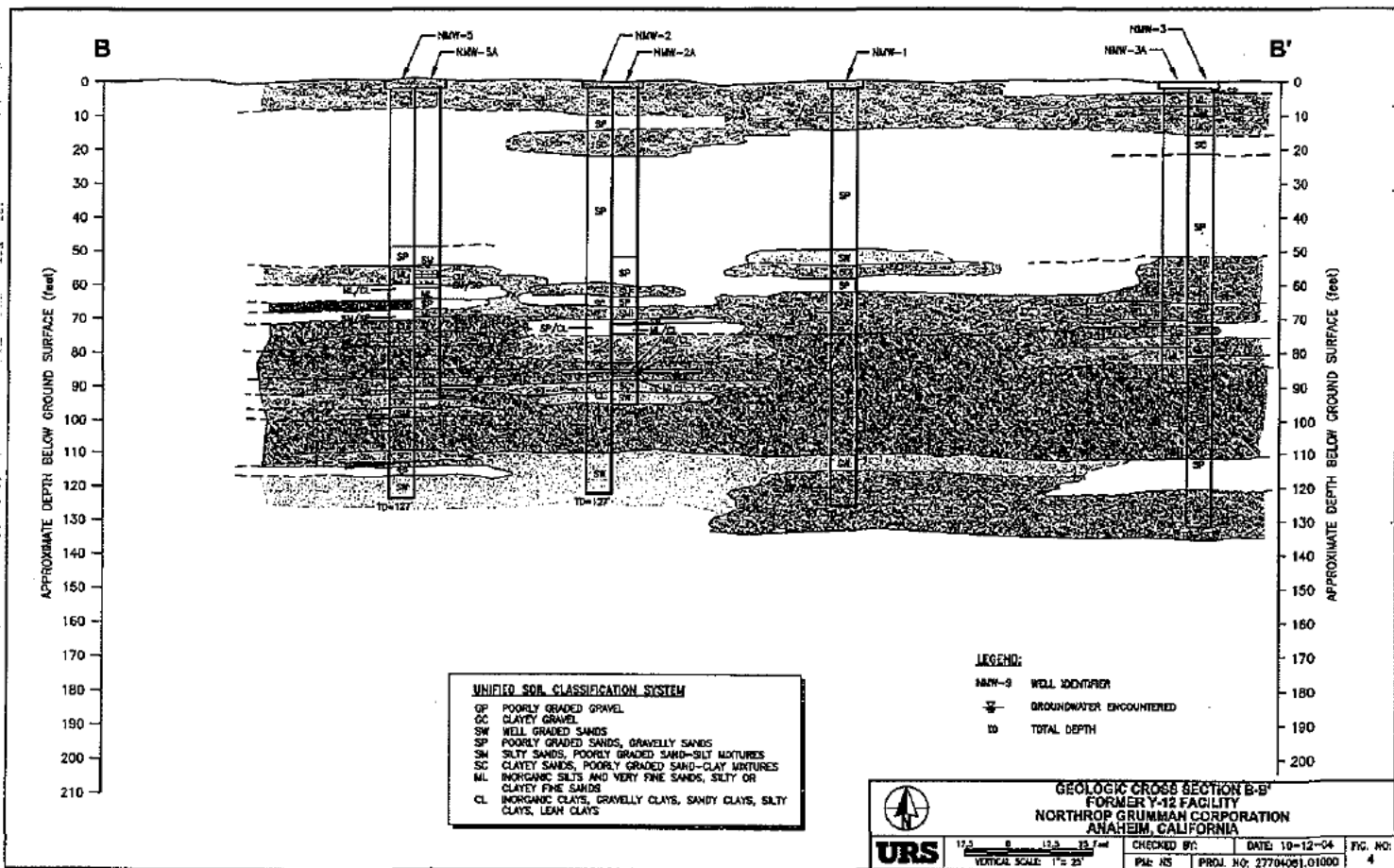
Oct 11, 2004 - 9:37am

OCWDVOC-0020236



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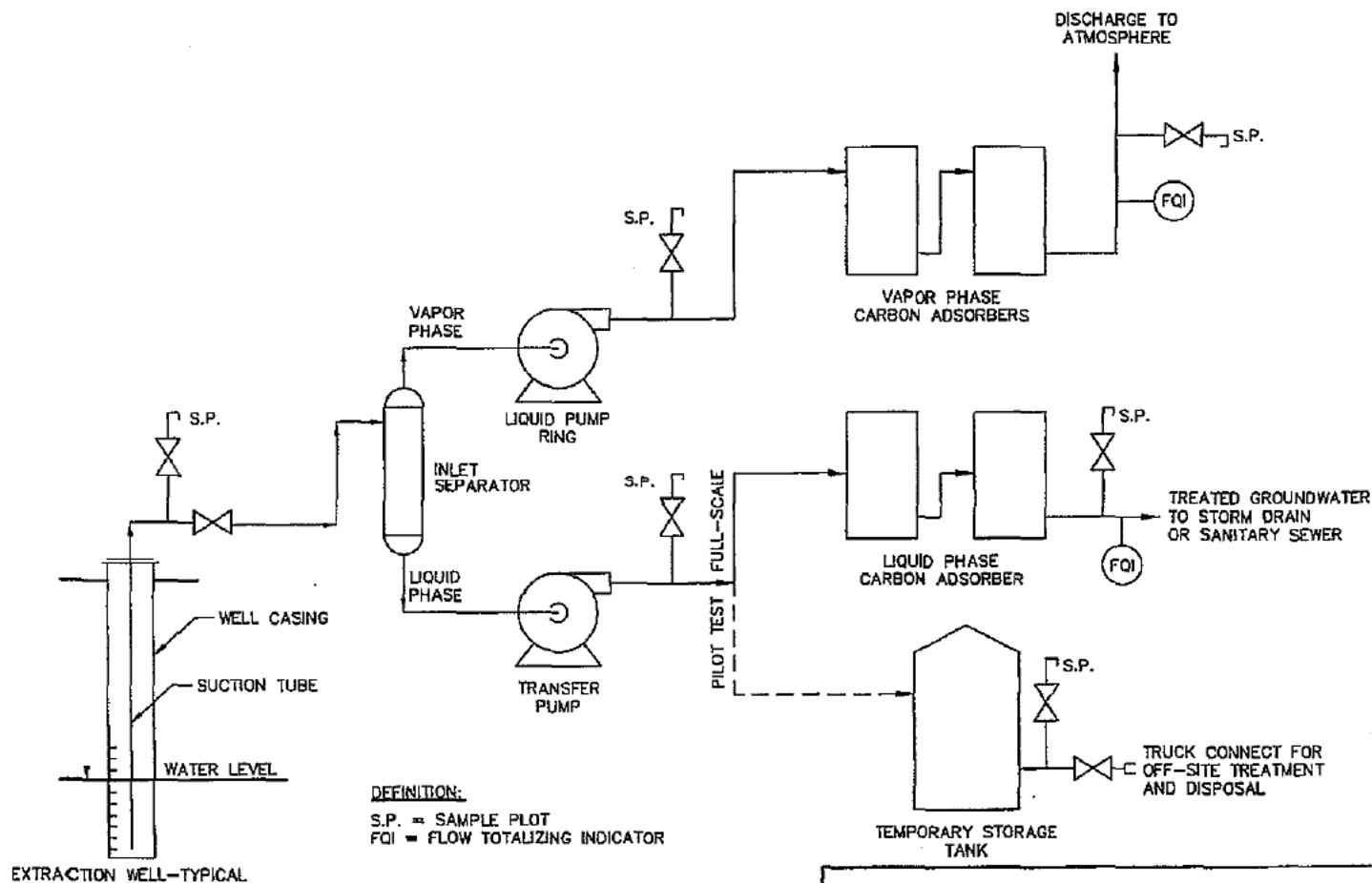
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2637704061\VC cross section drawing Oct 12, 2004 - 4:56pm

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SCHEMATIC DIAGRAM-TWO PHASE EXTRACTION

URS

CHECKED BY:

DATE: 10-12-04

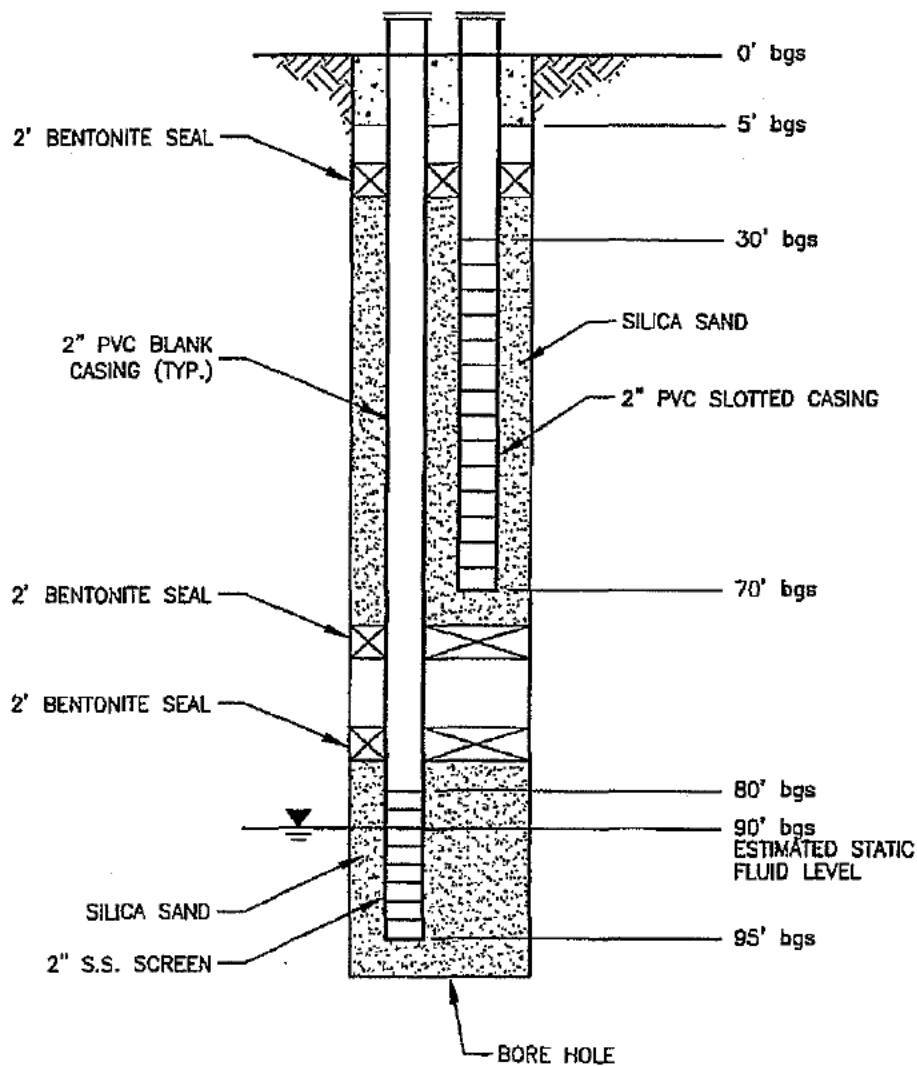
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OCWDVOC-0020239



bgs = BELOW GROUND SURFACE

**SVC/MPE WELL SCHEMATIC
TYPICAL x 3 - NMW-11, 12, AND 13
NORTHROP GRUMMAN CORPORATION
ANAHEIM, CALIFORNIA**

URS

TO TO SCALE

CHECKED BY:

DATE: 10-12-04

FIG. NO:

PM: NS

PROJ. NO: 27704081.01000

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EXHIBIT 32



California Regional Water Quality Control Board

Santa Ana Region



Alan C. Lloyd, Ph.D.
Agency Secretary

3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (951) 782-4130 • FAX (951) 781-6288 • TDD (951) 782-3221
www.waterboards.ca.gov/santaana

Arnold Schwarzenegger
Governor

April 19, 2006

Mr. Timothy Haltmeyer, Manager
Environment, Health, Safety and Medical
Northrop Grumman Corporation
One Hornet Way, PA12/W9
El Segundo, CA 90245

GROUNDWATER REMEDIATION PLAN – CLEANUP AND ABATEMENT ORDER (CAO) NO. R8-2003-108, FORMER NORTHROP GRUMMAN CORPORATION (NGC) Y-12 FACILITY, 301 ORANGETHORPE AVENUE, ANAHEIM, CA

Dear Mr. Haltmeyer:

URS Corporation (URS), on behalf of Northrop Grumman Corporation, submitted a Groundwater Remediation Plan (GRP) dated October 13, 2004 for the former Northrop Grumman Corporation Y-12 facility. After the GRP was submitted, we had informed Northrop representatives that our response was pending based on further evaluation of our concern that the GRP did not address the shallow portion of the uppermost regional aquifer.

The GRP states that eight potential remedial alternatives were screened to remediate the volatile organic compounds (VOCs) in the vadose zone soil and the semi-perched groundwater, and two alternative technologies for remediation were selected for further evaluation: 1) No action and 2) Soil vapor extraction/multi-phase extraction. URS considered the nine criteria for feasibility studies as defined in the USEPA National Oil and Hazardous Substances Pollution Contingency Plan (1990), the volatile organic compound (VOC) concentrations in the soil and groundwater, and the lithologic and hydrogeologic conditions at the site, and selected soil vapor extraction/multi-phase extraction (SVE/MPE) as the appropriate remedial technology to clean up the shallow soil and semi-perched groundwater at this site.

URS has proposed installation of several nested SVE and MPE wells (the number of wells has not yet been determined). The wells will be connected via a system of pipes and pumps to a vacuum system, blowers and air-water separators. The groundwater and vapor will be treated using canisters containing granular activated carbon (GAC). Screened intervals for both types of wells will be selected to address the different lithologies and to minimize the preferential flow of vapor through the high permeability soil layers.

According to the workplan, the groundwater elevation and dissolved phase VOC concentrations in each well will be monitored during start-up and throughout the operation of the remediation system. Treated groundwater may be discharged to the sanitary sewer system under a permit from the Orange County Sanitation District, or discharged to the storm drain and monitored according to a National Pollutant Discharge Elimination System (NPDES) Permit. The SVE/MPE system will be operated until the remediation is deemed complete, as determined in conjunction with Board staff. At the end of this operation period, a report and recommendations will be submitted to Board staff for review. The soil venting system will be monitored and operated in accordance with South Coast Air Quality Monitoring District's Authority to Construct and Permit to Operate conditions.

California Environmental Protection Agency



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OCWD VOC 0047171

URS has proposed to conduct a pilot test to obtain performance data that will be used to optimize the design of the full-scale system. URS proposes to use monitoring well NMW-2A as the focus well for the pilot test, with three new wells, NMW-11, NMW-12 and NMW-13, to be installed at distances of 10, 30 and 60 feet from NMW-2A. Wells screened in the upper soil intervals, from 30 to 70 feet below ground surface (bgs), will be used to test permeable soils in the upper vadose zone and monitor the SVE, while wells screened in the lower intervals, 80 to 95 feet bgs, will target the semi-perched groundwater and vadose zone soils. URS has proposed a 3-hour pilot test to evaluate the conditions at the site.

As noted above, the GRP proposes to remediate VOCs in the vadose zone soil and the semi-perched groundwater, and does not intend to address the uppermost regional aquifer. The semi-perched groundwater is present at about 80 to 95 feet bgs and the uppermost regional aquifer is encountered at a depth of about 110 feet bgs. The semi-perched groundwater occurs at the site in small discontinuous lenses within the predominantly clay interval between about 80 and 110 feet bgs. Board staff informed Northrop as early as 1997 that remediation of the uppermost regional aquifer was necessary. In our February 20, 1997 letter, Board staff stated (1) "It appears that the so called "clay confining layer" does not provide an adequate barrier to hydraulic communication between the uppermost water bearing zone and the lower water bearing zone", (2) "Investigations at the site indicate that high concentrations of chlorinated volatile organic compounds, mostly TCE, exist in both the uppermost water bearing zone (90 to 107 bgs) and the lower water bearing zone (below 107 bgs)", (3) "The recently installed monitoring wells were all screened in the lower water bearing zone (from about 110 ft bgs to 125 ft bgs)", and (4) "The high level of VOCs in groundwater in the "uppermost and lower water bearing zones" act as a continuing source of additional VOCs impact to groundwater quality in the area. These additional impacts to water quality from the site must be mitigated."

Recent groundwater monitoring results further substantiate the need to provide remediation of the shallow portion of the uppermost regional aquifer. TCE has generally ranged from about 50 ppb to about 120 ppb in NMW-2 from 2000 through 2004. In the two sampling events during the first two quarters of 2005, TCE was detected at 370 ppb and 260 ppb. In the two sampling events during the last two quarters of 2005, TCE was detected at 1100 ppb and 1000 ppb. Considering similar increases in PCE and 1,1-DCE that occurred, total VOCs in NMW-2 are currently about 1,500 ppb. NMW-2 is screened from 110 to 125 feet bgs, in the uppermost regional aquifer. It is evident that VOCs are continuing to impact the uppermost regional aquifer at significant concentrations. The removal of VOCs from the uppermost regional aquifer at the site is necessary to prevent VOCs from migrating further downgradient in the uppermost regional aquifer. Therefore, the GRP must address the uppermost regional aquifer.

The GRP states that the selected remedial alternative will address the "site soils and semi-perched groundwater impacted with VOCs at the site." Although the GRP states that a pilot test will be conducted to obtain performance data for use in design of a full-scale system, the GRP does not describe the lateral extent of soil or groundwater that is ultimately intended to be remediated. NMW-2A and NMW-2 are located about 240 feet downgradient of the location of the former degreaser, and about 60 feet upgradient of the property line. Detailed investigations have not been conducted in this general area to determine the lateral extent of the VOCs in soil and groundwater in order to delineate the area in need of soil and groundwater remediation. Although the monitoring wells located about 850 feet generally downgradient of NMW-2A and NMW-2 do not exhibit VOCs in concentrations that justify the need to construct a groundwater extraction system at that location, considering the higher concentrations of VOCs found currently and historically in NMW-2A and NMW-2, it is evident that VOCs in concentrations that justify remediation occur at some unknown distance in the semi-perched groundwater and the shallow portion of the uppermost regional aquifer downgradient of NMW-2A and NMW-2.



We concur with the pilot test portion of the GRP to obtain performance data for use in design of a full-scale system to address vadose zone soil and the semi-perched groundwater. However, we have the following comments:

- The GRP must be revised to address the shallow portion of the uppermost regional aquifer. As you are aware, one of the groundwater extraction wells associated with the Orange County Water District's proposed North Basin Groundwater Protection Project is expected to be located about 2,500 feet directly downgradient of the former Northrop facility. We understand that Northrop and the Orange County Water District are currently in discussions regarding the extent to which Northrop may participate in that project in order to address the VOCs from the former Northrop facility that will be removed by Orange County Water District's proposed extraction well and treatment facilities. However, the source area at the site, consisting of the vadose zone soil, semi-perched groundwater and the shallow portion of the uppermost regional aquifer, must be effectively remediated so that it does not act as a continuing source of VOCs.
- The GRP must be revised to clearly delineate the lateral extent of the area that is intended to be addressed by the remediation system. Since insufficient data exists to clearly delineate the area at and downgradient of the location of the former degreaser that will require remediation, the area described for remediation in the revised GRP must be large enough to clearly encompass the lateral extent that VOCs could be present in the vadose zone soil, semi-perched groundwater and uppermost regional aquifer from the location of the former degreaser to the area at, and immediately downgradient of, the boundary of the site. As an alternative, acquiring additional soil and groundwater data can be proposed to justify a smaller area for remediation.
- Based upon our collective experience with similar projects, it is common practice to run the pilot extraction test for a minimum of eight hours. Therefore, we recommend that an 8-hour test be conducted at this site. This longer time period is usually necessary to allow adequate time for the system to be brought to full operational conditions, and to adequately monitor the vacuum being applied. The applied vacuum and the vapor flow rates should be monitored at fixed time intervals, and a data plot drawn to determine the optimum extraction rates that will be needed to run the system. After the pilot test has been completed, a report must be submitted to Board staff, summarizing the results and evaluating the pilot test data. Full-scale design drawings showing locations of the extraction wells, treatment system, and other details of the remediation system are to be submitted for review by Board staff, prior to final construction.

Please submit a revised GRP by May 31, 2006. If you have any questions, please contact Maneck G. Chichgar, Project Manager, at (951) 782-3252, or you may call Robert Holub, Supervising Engineer, at (951) 782-3298.

Sincerely,

K + V. Bittel

for

Gerard J. Thibeault
Executive Officer

cc: Norbert Schulz, URS
Dave Mark, OCWD

C:/Data/NorthropY-12/Comments GW Remed Plan

California Environmental Protection Agency



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OCWD VOC 0047173

EXHIBIT 33

NGP
412

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1/13	4/20
MGC	6/21/06

Transmitted Via U.S. Mail

June 12, 2006

Robert Holub
California Regional Water Quality Control Board
3737 Main Street, Suite 500
Riverside, CA 92501-3348

Re: Meeting Summary and Anticipated Follow up Activities
Former Northrop Grumman System Corporation Y-12 Facility
Cleanup and Abatement Order No. R8-2003-108
301 Orangethorpe Avenue, Anaheim, California
BBL Project #: 37113

Dear Mr. Holub:

Thank you for taking the time to meet with Northrop Grumman Systems Corporation (NGSC) and its representatives on June 2, 2006 regarding the former Y-12 facility in Anaheim, California. The purpose of this letter is to provide a summary of our meeting and to outline the schedule of follow up activities we discussed.

The meeting was held in order to discuss your agency's comments on the October 13, 2004 Groundwater Remediation Plan (GRP) as presented in your letter of April 19, 2006, and to outline a plan to implement the required activities. As discussed, NGSC is in general agreement with your comments and is prepared to proceed with site remediation. Because additional investigation is needed to define the scope and boundaries of this remediation, and to address the potential effects of the Orange County Water District (OCWD) regional cleanup on the upper aquifer, the actual implementation should be performed in a phased manner. The following sections describe the project phases as discussed in our meeting.

Pilot Study Soil Vapor Extraction/Multi-Phase Extraction

NGSC will proceed with the implementation of the soil vapor extraction (SVE)/Multi-Phase Extraction (MPE) pilot study in accordance with the 2004 GRP and your April 19, 2006 comments. We anticipate that the pilot study can be completed before the end of August 2006 providing that we are able to obtain and schedule site access with the current property owner.

Pre-design Investigation of Vadose Zone and Perched Groundwater Conditions

In parallel with the SVE/MPE pilot study, NGSC will conduct additional investigations of the vadose zone and perched groundwater conditions in the vicinity of the suspected onsite source area, the former

EXHIBIT 34



Northrop Y-12

Imagine the result

Partial copy of report

**Northrop Grumman Systems
Corporation**

**Two-Phase and Soil Vapor
Extraction Pilot Test Studies
Report**

Former Y-12 Facility
Anaheim, California

March 2007

Executive Summary

BBL Environmental Services, Inc., an ARCADIS company (BBLES), has prepared this Two-Phase Extraction (TPE) and Soil Vapor Extraction (SVE) Pilot Test Report for Northrop Grumman Systems Corporation (NGSC) to provide a summary of the TPE and SVE pilot testing conducted at the Former NGSC Y-12 Facility (Site) in Anaheim, California. The TPE/SVE pilot tests were performed between October 23 and 26, 2006 in general accordance with the Groundwater Remediation Plan, prepared by URS Corporation on October 12, 2004 and approved by the Santa Ana Regional Water Quality Control Board in their April 19, 2006 letter. This work was conducted based on our proposal to NGSC dated July 18, 2006.

The facility was operated by NGSC for aerospace manufacturing between 1962 and 1994 for manufacturing aircraft parts. The Site was sold in 1996 and is now used as an automotive products packaging and storage facility. Before selling the property, NGSC conducted soil investigation and performed limited soil remediation of petroleum compounds, metals, and volatile organic compounds (VOCs). In 1995, the SARWQCB issued a "no further action" letter for the soil remediation performed at specific locations at the former Site. Following this determination, NGSC installed a network of 18 groundwater monitoring wells to evaluate the quality of the groundwater beneath and in the vicinity of the facility. Based on these results, the SARWQCB concluded that no further investigations downgradient of the Y-12 facility were necessary and requested that NGSC develop a groundwater remediation plan to address onsite impacts. Based on previous investigations, the primary constituents of concern (COCs) in groundwater at the site are VOCs, including trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethene (1,1-DCE), and tetrachloroethene (PCE). However, PCE is not known to have been used at the site and is not considered to be a site-related COC.

The purpose of the TPE/SVE pilot test was to evaluate the performance and effectiveness of these remedial technologies in reducing the concentrations of the volatile organic COCs in vadose-zone soil and perched groundwater at the site. A second objective was to gather data related to subsurface conditions to develop site-specific engineering design parameters to aid in selecting a remediation technology.

Prior to the commencement of the TPE/SVE pilot testing, three nested monitoring/SVE wells (NMW-11, NMW-12, and NMW-13) were installed at distances of approximately 12, 30, and 60 feet from monitoring well NMW-2A, which was used as the TPE/SVE extraction well. Each of the three nested monitoring/SVE wells consisted of a dual

completion, with a shallow interval screened between 30 and 70 feet bgs and a deeper interval screened between 80 and 95 feet bgs. The shallow interval was used to test conditions in the vadose zone and the deeper interval was used to evaluate the perched groundwater interval. The shallow screened interval of well NMW-11 was later utilized for vapor extraction as part of the SVE pilot test.

TPE pilot testing was initiated on October 23, 2006 with system installation and debugging prior to two days of system operation. This was followed by one day of SVE pilot testing on October 26, 2006. The TPE technology removed a combination of contaminated groundwater and hydrocarbon-impacted vapors from the subsurface in a high-velocity dual-phase stream, while the SVE system extracted only vapor streams. Both systems were operated at various flow and vacuum settings to determine which parameters work best for the lithologic conditions. The effect of each remedial system on monitoring wells located in the vicinity of the extraction well was evaluated throughout the pilot test period.

The efficiency and implementability of the investigated remedial technologies were assessed based on two criteria: radius of influence (ROI) and the removal rate of volatile organic compounds (VOCs). High-removal rates were observed over the limited period of time during the initial testing of the SVE system. The ROI of the SVE pilot system, determined by monitoring the vacuum in the groundwater monitoring wells surrounding the extraction well, was estimated to be approximately 50 feet. In the TPE technology case, the VOC removal rate (as hexane) was significantly lower depending on the operating conditions. The low permeability of the soil and the lack of hydraulic conductivity were manifested in the absence of communication between the extraction well and the monitoring wells. Neither groundwater drawdown nor vacuum was detected in the monitoring wells.

Therefore, the higher initial VOC removal efficiency and the more significant radius of influence associated with the SVE system indicated the superiority of SVE over TPE for potential full-scale implementation at the Site. The SVE pilot test also generated essential data that would be used to develop site-specific engineering design parameters for full-scale application of SVE at the Site.

3.1.3.1 System Operation Parameters

The TPE pilot test system was observed to generate an inlet vacuum ranging between 15 inches of mercury (in. Hg) and 27.5 in. Hg. The system was initially operated at 17.5 in. Hg on Day 1, the inlet vacuum was then increased to the maximum (27.5 in. Hg) when the well was dewatered completely. Groundwater extraction flow could not be maintained due to the tight formation of the predominantly clay interval present between 70 and 100 feet bgs at the Site.

On the second day of the TPE test, the extraction pipe and the well casing were perforated to allow for ambient air to enter the well space and assist in pulling groundwater from NMW-2A. This improved groundwater extraction for only a short period due to the slow recharge rate in the well. Consequently, the extraction pipe was moved to the deep screened interval of the adjacent well, NMW-11. As in the NMW-2A case, groundwater extraction was observed initially until the well was completely dewatered after approximately one hour of operation. Air flow fluctuated between 21 scfm and 109 scfm on Day 1 and between 61 scfm and 98 scfm on Day 2. As indicated above, a pressure gauge was installed on top of the TPE well casing to determine vacuum in the extraction wells during the pilot test. Casing vacuum ranged between 3 in. Hg and 8.5 in. Hg on Day 1 and between 0 in. Hg and 10 in. Hg on Day 3.

3.1.3.2 Inlet VOC Concentrations

Inlet VOC concentrations, measured using a hand-held PID, are presented in Table 2. The inlet VOC concentrations and mass removed each day are illustrated in graphs on Figures 3 and 4. VOC levels were generally low on Day 1 and fluctuated between 11 parts per million by volume (ppmv) and 403 ppmv, the latter observed after completely stopping dilution with ambient air. VOC concentrations fluctuated between 6 ppmv and 69 ppmv on Day 2 of TPE pilot testing. The inlet vapor stream was also sampled daily for VOC analysis by EPA Method 8260B. Acetone (4 ppmv), 1,1-DCE (25 ppmv), PCE (4.3 ppmv), TCE (23 ppmv), and 1,1,1-TCA (1.9 ppmv) were the VOCs detected at the highest concentration in the system inlet. Analytical results of the vapor samples are presented in Table 3.

3.1.3.3 Groundwater Extraction Flow

A flow totalizer was used to determine the volume and the flow rate of groundwater extracted during the TPE pilot testing. A total of 116 gallons of groundwater were

pumped from TPE wells NMW-2A and NMW-11D during two days of system operation, resulting in an average flow rate of 0.13 gallons per minute (gpm). Increasing the inlet vacuum did not improve groundwater extraction rate due to the low permeability of the clay-rich interval between approximately 70 and 100 feet bgs.

The extracted groundwater was sampled daily during the pilot test and analyzed for VOCs. A summary of the analytical results is presented in Table 4. Methyl ethyl ketone (MEK), TCE, 1,1-DCE, and PCE were the VOCs detected at the highest concentrations in the effluent, with concentrations as high as 250 micrograms per liter ($\mu\text{g/L}$), 140 $\mu\text{g/L}$, 32 $\mu\text{g/L}$, and 18 $\mu\text{g/L}$, respectively.

3.1.3.4 ROI Parameters

Vacuum measurements in monitoring/SVE wells NMW-11, NMW-12, and NMW-13 revealed no communication between the extraction well and the monitoring wells since negative pressures were not detected in any of the well casings of the three wells (Table 1). Groundwater elevation fluctuations in the monitoring wells were insignificant and minimal drawdown was observed in NMW-11D, the well closest to the extraction well (Table 5, and Figures 5 and 6). Groundwater levels in wells NMW-12D and NMW-13D slightly increased as the TPE pilot test proceeded, possibly due to atmospheric pressure variations.

3.1.3.5 Waste Generation

The TPE technology generated VOC-impacted vapor streams that required treatment prior to release to the atmosphere. Vapor-phase VOCs detected during the pilot test were low (mostly <100 ppmv), and activated carbon breakthrough did not occur during the two-day testing period. In addition to vapor-phase VOCs, the TPE technology generated aqueous-phase VOCs in the groundwater that was extracted from the aquifer at a relatively low flow rate (approximately 0.13 gpm). Over two approximately 8-hour days of pilot testing, the TPE system extracted 116 gallons of groundwater that needed further treatment prior to discharge.

3.2 SVE Pilot Test

The effectiveness of soil vapor extraction technology was investigated on Day 3 of pilot testing at the former Y-12 facility with the shallow screened interval of NMW-11 used as the extraction well.

The SVE system did not generate any liquid waste requiring VOC analysis. At the end of TPE and SVE pilot testing, a sample of liquid was taken from the storage tank for waste profiling and disposal purposes.

3.2.3 Results and Observations

SVE system operation and monitoring results are discussed in the following subsections. Daily operation and performance measurements are included in Table 6. Laboratory analytical reports are attached in Appendix D.

3.2.3.1 System Operation Parameters

As in the case of TPE technology, vacuum and air flow were the two critical parameters to be investigated. The SVE pilot system was operated at different vacuums throughout the 9-hr testing period (10 in. Hg, 12.5 in. Hg, 15 in. Hg, and 17.5 in. Hg). As expected, the air flow was observed to decrease as the inlet vacuum increased and ranged between 102.5 ± 5.6 scfm at 17.5 in. Hg and 140.1 ± 1.3 scfm at 10 in. Hg. Vacuum was not detected in the extraction well NMW-11. In fact, a positive pressure was detected in the well casing, indicating a lithology with high permeability between ground surface and 70 feet bgs.

3.2.3.2 Inlet VOC Concentrations

Table 7 presents the VOC concentrations measured in the vapor inlet during the SVE pilot test with concentrations consistently exceeding the PID maximum reading of 9,999 ppmv. Inlet VOC concentrations and mass removed are illustrated in Figure 7. The inlet vapor stream was also sampled for VOC analysis by EPA Method 8260B shortly following system startup, midway through operation, and at the end of the SVE pilot testing. The highest detected contaminants were 1,1-dichloroethane (1,1-DCA, 1.2 ppmv to 1.8 ppmv), 1,1-DCE (540 ppmv to 600 ppmv), methylene chloride (50 ppmv to 83 ppmv), PCE (140 ppmv to 210 ppmv), toluene (3 ppmv to 5.6 ppmv), TCE (550 ppmv to 680 ppmv), and 1,1,1-TCA (16 ppmv to 23 ppmv). Analytical results of the vapor samples are presented in Table 3.

3.2.3.3 ROI Parameters

The negative pressure gradient generated by SVE systems induces the movement of subsurface vapors towards the extraction well(s). In general, the lower the inlet vacuum, the higher the air flow and the induced vacuum in the surrounding monitoring

TABLE 3
LABORATORY VAPOR INLET VOC CONCENTRATIONS
TPE/SVE PILOT TEST

NORTHROP GRUMMAN SYSTEMS CORPORATION
FORMER Y-12 FACILITY, ANAHEIM, CA

Site ID:	INLET-A	INLET-A	INLET-A	INLET-B	INLET-B	INLET-B	INLET-B	INLET-C	INLET-C	INLET-C
Sample ID:	Inlet-102406-A	Inlet-102506-A	Inlet-102606-A	Inlet-102406-B	Inlet-102406-B	Inlet-102506-B	Inlet-102606-B	Inlet-102406-C	Inlet-102506-C	Inlet-102606-C
Sample Date:	10/24/06	10/25/06	10/26/06	10/24/06	10/24/06	10/25/06	10/26/06	10/24/06	10/25/06	10/26/06
Method:	TO-15									
Units:	ppbv									
ANALYTE										
Acetone	38	18	ND<3300	43	37	18	3700	4000 D	15	ND<3600
Benzene	1.1	1.0	ND<830	0.53	ND<0.50	0.68	ND<900	8.9	0.71	ND<900
Benzyl chloride	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
Bromolorm	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
Bromomethane	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
Carbon disulfide	3.4	3.0	ND<830	3.1	3.1	3.4	ND<900	4.1	3.3	ND<900
Carbon Tetrachloride	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
Chlorobenzene	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
Chloroethane	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
Chloroform	0.65	2.6	ND<830	0.78	0.73	1.1	ND<900	35	0.81	ND<900
Chloromethane	0.70	0.58	ND<830	0.68	0.79	0.57	ND<900	ND<4.0	0.58	ND<900
Dibromochloromethane	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
1,2-Dibromoethane (EOB)	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
1,2-Dichlorobenzene	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
1,3-Dichlorobenzene	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
1,4-Dichlorobenzene	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
Dichlorobromomethane	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	3100
1,1-Dichloroethane	2.4	9.3	1800	3.1	2.8	3.6	1800	130	3.3	1200
1,2-Dichloroethane	0.51	2.2	ND<830	0.54	ND<0.50	0.85	ND<900	21	ND<0.50	ND<900
1,1-Dichloroethene	370 D	1400 D	540000 D	510 D	410 D	1400 D	600000 D	25000 D	1300 D	680000 D
cis-1,2-Dichloroethene	ND<0.50	2.9	ND<830	0.62	0.59	0.99	ND<900	28	1.3	ND<900
trans-1,2-Dichloroethene	ND<0.50	1.7	ND<830	ND<0.50	ND<0.50	0.87	ND<900	24	1.6	ND<900
1,2-Dichloropropane	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
cis-1,3-Dichloropropene	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	ND<0.50	ND<900
trans-1,3-Dichloropropene	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
4-Ethyl Toluene	41	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	27	ND<0.50	ND<900
Ethylbenzene	19	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	17	ND<0.50	ND<900
Freon 11 (Trichlorofluoromethane)	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
Freon 113 (1,1,2-Trichloro-1,2,2-trifluoroethane)	ND<1.0	2.4	ND<1700	ND<1.0	ND<1.0	1.1	ND<1800	37	ND<1.0	ND<1800
Freon 114 (1,2-Dichlorotetrafluoroethane)	ND<2.0	ND<2.0	ND<3300	ND<2.0	ND<2.0	ND<2.0	ND<3600	ND<16	ND<2.0	ND<3600
Freon 12 (Dichlorodifluoromethane)	0.63	0.71	ND<830	0.60	0.63	0.55	ND<900	ND<4.0	0.53	ND<900
Hexachlorobutadiene	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
2-Hexanone	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
Methyl Ethyl Ketone	43	26	ND<1700	45	36	12	ND<1800	380	7.7	ND<1800
Methyl isobutyl ketone (MIBK)	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
Methyl Tert-butyl ether (MTBE)	ND<2.0	ND<2.0	ND<3300	ND<2.0	ND<2.0	ND<2.0	ND<3600	ND<16	ND<2.0	ND<3600
Methylene chloride	12	18	82000	ND<10	ND<10	13	83000	ND<80	12	50000
Styrene	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
1,1,2,2-Tetrachloroethane	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
Tetrachloroethene	110 D	1300 D	140000 D	170 D	140 D	580 D	210000 D	4300 D	260 D	180000 D
Toluene	14	2.4	3000	2.8	2.0	2.8	4300	15	1.8	5800
1,2,4-Trichlorobenzene	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
1,1,1-Trichloroethane	30	150 D	19000	37	28	40	23000	1900 D	29	16000
1,1,2-Trichloroethane	0.83	5.5	ND<830	1.2	1.5	1.5	ND<900	34	1.2	ND<900
Trichloroethene	330 D	3400 D	550000 D	600 D	460 D	1700 D	880000 D	23000 D	1700 D	600000 D
1,2,4-Trimethylbenzene	68 D	1.1	ND<1700	1.8	ND<1.0	ND<1.0	ND<1800	140	ND<1.0	ND<1800
1,3,5-Trimethylbenzene	20 D	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	42	ND<0.50	ND<900
Vinyl Acetate	ND<1.0	ND<1.0	ND<1700	ND<1.0	ND<1.0	ND<1.0	ND<1800	ND<8.0	ND<1.0	ND<1800
Vinyl Chloride	ND<0.50	ND<0.50	ND<830	ND<0.50	ND<0.50	ND<0.50	ND<900	ND<4.0	0.85	ND<900
o-Xylene	23 D	0.53	ND<830	0.88	ND<0.50	0.52	ND<900	54	ND<0.50	ND<900
p/m-Xylene	88	1.1	ND<1700	1.9	1.1	1.3	ND<1800	79	ND<1.0	2100

NOTES:

ID- Sample Identification

ppbv- Parts per billion by volume

ND<0.5- Analyte not detected at reporting limit shown

The "D" flag indicates the result is from a diluted sample

TABLE 4
VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN EXTRACTED GROUNDWATER
TPE PILOT TEST

NORTHROP GRUMMAN SYSTEMS CORPORATION
FORMER Y-12 FACILITY, ANAHEIM, CA

Site ID:	GW-EFFL-NM02A	GW-EFFL-NM011	GW-051226
Sample ID:	GW-102608	GW-102606	COMP-102608
Sample Date:	10/24/06	10/26/06	10/26/06
Method:		8260B	
Units:		µg/l	
ANALYTE			
Acetone	ND<100	ND<50	ND<50
Benzene	ND<1.0	ND<0.50	ND<0.50
Bromobenzene	ND<2.0	ND<1.0	ND<1.0
Bromochloromethane	ND<2.0	ND<1.0	ND<1.0
Bromoforn	ND<2.0	ND<1.0	ND<1.0
Bromomethane	ND<2.0	ND<1.0	ND<1.0
n-Butylbenzene	ND<2.0	ND<1.0	ND<1.0
sec-Butylbenzene	ND<2.0	ND<1.0	ND<1.0
Carbon disulfide	ND<20	ND<10	ND<10
Carbon Tetrachloride	ND<1.0	ND<0.50	ND<0.50
Chlorobenzene	ND<2.0	ND<1.0	ND<1.0
Chloroethane	ND<2.0	ND<1.0	ND<1.0
Chloroform	ND<2.0	ND<1.0	ND<1.0
Chloromethane	ND<20	ND<10	ND<10
2-Chlorotoluene	ND<2.0	ND<1.0	ND<1.0
4-Chlorotoluene	ND<2.0	ND<1.0	ND<1.0
1,2-Dichloro-2-chloropropene	ND<10	ND<5.0	ND<5.0
Dibromochloromethane	2.3	ND<1.0	ND<1.0
1,2-Dichloroethane (EDB)	ND<1.0	ND<1.0	ND<1.0
Dibromomethane	ND<2.0	ND<1.0	ND<1.0
1,2-Dichlorobenzene	ND<2.0	ND<1.0	ND<1.0
1,3-Dichlorobenzene	ND<2.0	ND<1.0	ND<1.0
1,4-Dichlorobenzene	ND<2.0	ND<1.0	ND<1.0
Dichlorobromomethane	2.8	ND<1.0	ND<1.0
1,1-Dichloroethane	ND<2.0	ND<1.0	ND<1.0
1,2-Dichloroethane	ND<1.0	ND<0.50	0.81
1,1-Dichloroethene	ND<2.0	1.4	32
cis-1,2-Dichloroethene	ND<2.0	ND<1.0	ND<1.0
trans-1,2-Dichloroethene	ND<2.0	ND<1.0	ND<1.0
1,2-Dichloropropane	ND<2.0	ND<1.0	ND<1.0
1,3-Dichloropropane	ND<2.0	ND<1.0	ND<1.0
2,2-Dichloropropane	ND<2.0	ND<1.0	ND<1.0
1,1-Dichloropropane	ND<2.0	ND<1.0	ND<1.0
cis-1,3-Dichloropropene	ND<1.0	ND<0.50	ND<0.50
trans-1,3-Dichloropropene	ND<1.0	ND<0.50	ND<0.50
Ethylbenzene	ND<2.0	ND<1.0	ND<1.0
Freon 11 (Trichlorofluoromethane)	ND<20	ND<10	ND<10
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	ND<20	ND<10	ND<10
Freon 12 (Dichlorodifluoromethane)	ND<2.0	ND<1.0	ND<1.0
2-Hexanone	ND<20	ND<10	ND<10
Isopropylbenzene	ND<2.0	ND<1.0	ND<1.0
p-Isopropyltoluene	ND<2.0	ND<1.0	ND<1.0
Methyl Ethyl Ketone	250	ND<10	ND<10
Methyl Isobutyl ketone (MIBK)	ND<20	ND<10	ND<10
Methyl Tert-butyl ether (MTBE)	ND<2.0	ND<1.0	ND<1.0
Methylenedichloride	ND<20	ND<10	ND<10
Naphthalene	ND<20	ND<10	ND<10
n-Propylbenzene	ND<2.0	ND<1.0	ND<1.0
Styrene	ND<2.0	ND<1.0	ND<1.0
tert-Butylbenzene	ND<2.0	ND<1.0	ND<1.0
1,1,1,2-Tetrachloroethane	ND<2.0	ND<1.0	ND<1.0
1,1,2,2-Tetrachloroethane	ND<2.0	ND<1.0	ND<1.0
Tetrachloroethene	ND<2.0	1.1	18
Toluene	ND<2.0	ND<1.0	ND<1.0
1,2,3-Trichlorobenzene	ND<2.0	ND<1.0	ND<1.0
1,2,4-Trichlorobenzene	ND<2.0	ND<1.0	ND<1.0
1,1,1-Trichloroethane	ND<2.0	ND<1.0	3.5
1,1,2-Trichloroethane	ND<2.0	ND<1.0	2.5
Trichloroethene	ND<2.0	8.8	140
1,2,3-Trichloropropane	ND<10	ND<5.0	ND<5.0
1,2,4-Trichloropropane	ND<2.0	ND<1.0	ND<1.0
1,3,5-Trinitrobenzene	ND<2.0	ND<1.0	ND<1.0
Vinyl Acetate	ND<20	ND<10	ND<10
Vinyl Chloride	ND<1.0	ND<0.50	ND<0.50
o-Xylene	ND<2.0	ND<1.0	ND<1.0
p-m-Xylene	ND<2.0	ND<1.0	ND<1.0

NOTES:

ID- Sample identification

µg/L- Micrograms per liter

ND<1.0- Analyte not detected at reporting limit shown

COMP-102608 is a composite sample taken from the extracted groundwater storage tank

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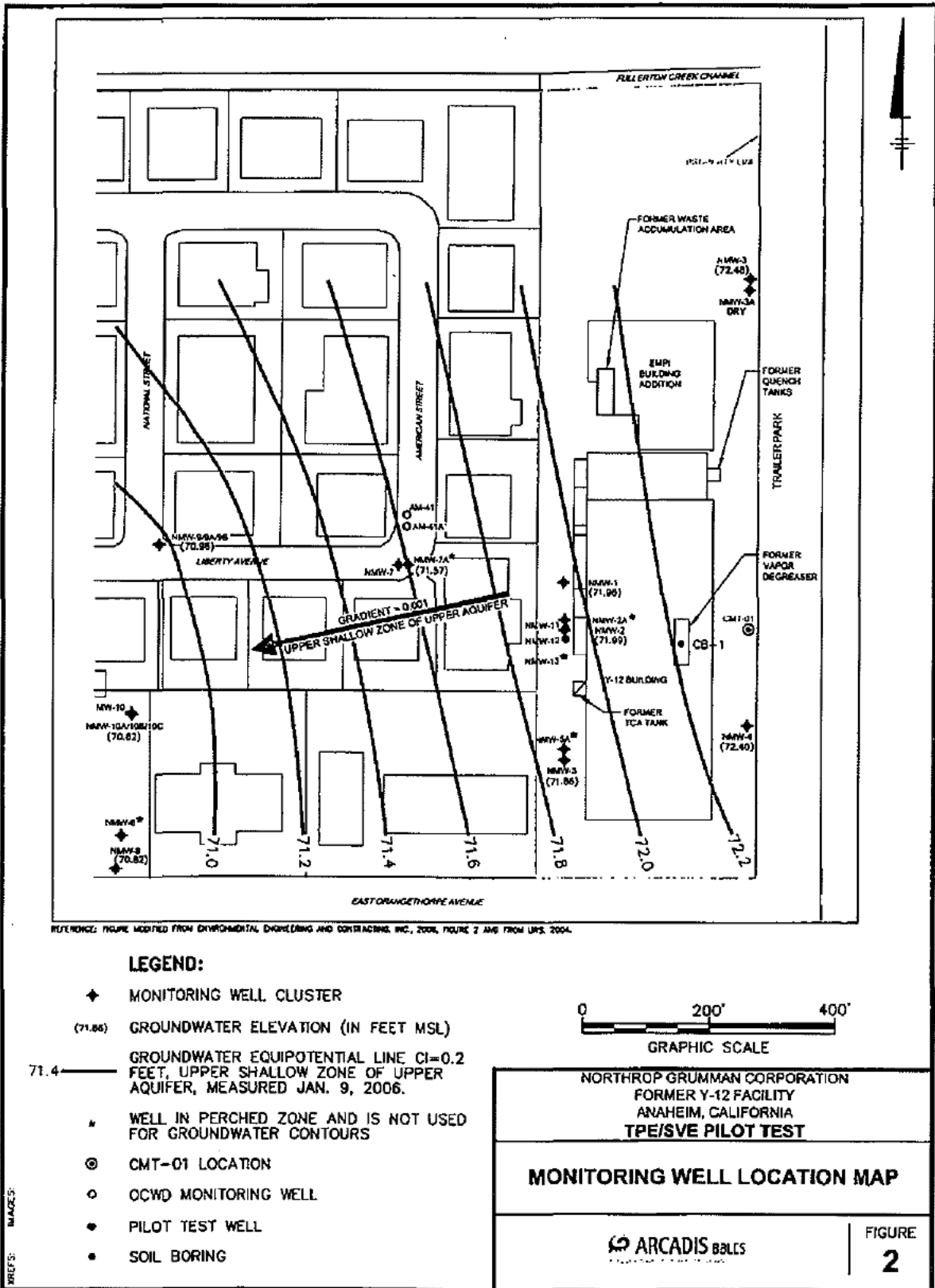


EXHIBIT 35



California Regional Water Quality Control Board

Santa Ana Region



Linda S. Adams
Secretary for
Environmental Protection

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Arnold Schwarzenegger
Governor

October 2, 2008

Mr. Timothy Haltmeyer, Manager
(Tim.Haltmeyer@ngc.com)
Environment, Health, Safety and Medical
Northrop Grumman Corporation
One Hornet Way, PA12/W9
El Segundo, CA 90245

APPROVAL OF REMEDIAL ACTION PLAN – CLEANUP AND ABATEMENT ORDER (CAO) NO. R8-2003-108, FORMER NORTHROP GRUMMAN CORPORATION, Y-12 FACILITY, 301 ORANGETHORPE AVENUE, ANAHEIM, CA

Dear Mr. Haltmeyer:

We have reviewed the "Remedial Action Plan" (RAP) for the former Northrop Grumman Corporation Y-12 facility, which was submitted by Equipoise Corporation (EQC), on behalf of Northrop Grumman Corporation (NGC).

EQC indicates that the purpose of the RAP was to implement a practical and feasible remedial technology for the removal of volatile organic compounds (VOCs) from the unsaturated zone and the perched groundwater zone. The RAP provides details of the results from: the two phase extraction (TPE) pilot test; the soil vapor extraction (SVE) pilot test conducted in 2006; the membrane interface probe (MIP) investigation; and the soil vapor investigation. The RAP summarizes the results, indicating the presence of VOCs below the clay/silt layers that are found at a shallow zone between 8 and 25 feet (ft) below ground surface (bgs), and a deeper zone between 60 and 75 ft bgs. VOCs are also trapped beneath a thin clay layer, situated between 36 and 40 ft bgs. Historically, the VOCs in the vapor phase at various depths extended laterally to the west-northwest of the main building, towards the Trilogy Plumbing property west of the Y-12 facility.

EQC's REMEDIATION APPROACH

EQC proposes to install 29 triple-nested vapor extraction wells (VEWs), EW-1 to EW-29, using a hollow stem auger drill rig. EW-1 to EW-18 will be installed outside the building and EW-19 to EW-29 will be installed inside the building. VEWs EW-6 to EW-16 and EW-19 to EW-29 will be screened from 4 ft to 9 ft bgs, 13 ft to 18 ft bgs, and 25 ft to 60 feet bgs. EW-4, EW-5, EW-17 and EW-18 will be screened from 4 ft to 14 ft bgs, 25 to 60 ft bgs and 65 to 95 feet bgs. EW-1, EW-2 and EW-3 will be screened

California Environmental Protection Agency



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NGSC47894

from 80 ft to 95 ft bgs. The VEWs will be constructed of 2-inch Schedule 40 poly vinyl chloride (PVC) casings and screens with 0.010-inch or 0.020-inch slots, depending upon the lithology. The filter packs will be #3 or #2/12 sands, extending 2-ft above the screened intervals. A bentonite seal will be placed above the sand, and Portland cement grout with up to 5% bentonite will be poured to complete the seal, up to the ground surface. Wells completed outside the building will have 18-inch flush-mounted traffic-rated boxes. Wells inside the building will be connected by horizontal piping to valve boxes outside the building, and will not have any surface completion. Photo ionization detector (PID) readings will be taken on soil samples collected at five foot intervals during the installation of all 29 wells, and described on boring logs together with the lithology.

Ten vapor monitoring probes, VMW-1 to VMW-10, will be installed using direct push technology at locations outside of the building. The probes will be used to evaluate the performance of the entire SVE system. Each of the probes will be triple nested and constructed of 1-inch diameter PVC casings, each with 5-foot screened intervals, starting at 12 ft, 42 ft and 67 ft bgs. Each of these triple-nested probe locations will be completed with a 12-inch diameter, flush-mounted, traffic-rated box. A baseline sample will be taken from each of the probes, and analyzed for VOCs using U.S. EPA Method 8260B.

Eleven horizontal vapor extraction wells, HW-1 to HW-11, will be installed using horizontal drilling techniques. The horizontal wells will be used to extract VOCs from the top 20 feet of soil, as the radius of influence (ROI) from the vertical wells is not sufficient to provide complete coverage. The target horizons for the horizontal wells are approximately 7 ft to 15 ft bgs, and the screened intervals will be between 25 ft and 50 ft long. These horizontal wells will be constructed of 2-inch Schedule 40 PVC casings and screens with 0.010-inch or 0.020-inch slots depending upon the lithology. These wells will be connected to valve boxes outside the building, which in turn will be connected to the treatment system.

Dual phase extraction (DPE) wells EW-1 to EW-5, EW-17 and EW-18, and monitoring wells NMW-11 to NMW-13 will have an additional 0.5-inch extraction line (a stinger), to remove groundwater. The DPE wells will operate as vapor extraction wells to extract soil vapor, and as DPE wells to remove the semi-perched groundwater.

The proposed extraction wells (both VEW and DPE) are divided into three operational units – the eastern, western and southern units, each with approximately 12 to 15 extraction well locations. These wells will be connected to two 500 standard cubic feet per minute (scfm) blowers capable of generating a vacuum equivalent to 10 inches of mercury at the inlet. They will be equipped with air-water separators and will be connected to two 2000-pound, vapor-phase granulated activated-carbon (GAC) canisters for VOC removal. The DPE system will have its own separate blower and water storage tank.



An additional groundwater monitoring well cluster, NMW-14 A & B, will be installed along the western border of the property, downgradient from the quench tank area. Groundwater monitoring well NMW-14A will be installed to a depth of 95 feet bgs, and screened between 85 and 95 feet bgs, while NMW-14B will be installed to a depth of 125 ft bgs and screened between 110 ft bgs and 125 ft bgs. Each of these will be constructed of Schedule 40 PVC casing and 0.02 inch slotted screen. Each well screen will be constructed with appropriate sand filter pack from the base of the silt trap to 4-ft above the screened interval. A 5-ft thick hydrated bentonite seal will be placed above the filter pack, and completed with cement grout to the surface. A 12-inch diameter traffic-rated well box will be placed at the surface, and completed in a manner to prevent water from collecting at the rim of the well box. The well location and top of casing will be surveyed by a licensed surveyor.

EQC's RAP proposes that the remediation system will therefore consist of: SVE and DPE extraction wells; vapor monitoring probes; groundwater monitoring wells; piping for collecting soil vapor and groundwater; vacuum blowers; off-gas and vapor treatment devices; and groundwater collection tanks.

EQC's RAP proposes to monitor the remedial system according to South Coast Air Quality Management District's permit requirements, and perform system checks and maintenance of equipment to ensure safe operation. The wells will be piped from three separate SVE well networks, so that two will be operational and one will be in a rebound cycle. The shallow wells of the nested completions will be operated first, progressing to deeper wells based upon weekly performance evaluations. The DPE wells will be operated separately. Soil vapor samples will be collected and analyzed for VOCs using EPA Method 8260B. EQC proposes to initially sample the wells upon system start up, and use this data for a baseline comparison. Intermediate sampling is proposed to be conducted every three months after system start up. These will be static surveys (no active vapor extraction), and will include vapor sampling from both vapor extraction and vapor monitoring probes (VEW and VMW). Final and rebound vapor testing will be done as the soil and groundwater remediation nears completion. Groundwater sampling will continue on a quarterly basis throughout the operation of the remediation system.

EQC proposes to include the results of system monitoring in the quarterly groundwater monitoring reports for the Y-12 site. The reports will include graphs of time versus VOC concentration for each extraction well and monitoring probe, volume of water extracted and recommendations. Board staff recommends that calculations of the volume of VOCs removed from the vapor phase and groundwater also be included in these reports.

We concur with the RAP submitted by EQC. Please notify us at least ten working days prior to start up of any field activities.



Be advised that, when the remediation activities appear to nearing completion, the final and rebound vapor testing shall be conducted after consultation with Board staff. You will also be required to conduct an indoor air sampling survey, to verify that the remedial efforts have been successful in reducing VOC concentrations in the soil and groundwater to levels that are protective of the health of occupants in the buildings.

Please submit all future proposals, including work plans, addenda and further RAPs, at least 30 days prior to any scheduled field activities. This will enable you to obtain our concurrence, and avoid potential delays to your project.

We request that you submit the RAP, the final report, field data, monitoring reports and all future documents relating to this project via the State Water Resources Control Board's GeoTracker website, <http://geotracker.waterboards.ca.gov/>.

If you have any questions, please contact Maneck G. Chichgar, Project Manager, at (951) 782-3252, or by email at mchichgar@waterboards.ca.gov, or you may contact Ann Sturdivant, Chief of our Site Cleanup/DoD Section, at (951) 782-4904 or asturdivant@waterboards.ca.gov.

Sincerely,



Gerard J. Thibeault
Executive Officer

cc: Richard Blackmer, Equipoise Corporation, San Clemente, CA
(rwblackmer@earthlink.com)
Norbert Schulz, Ninyo & Moore, San Diego, CA (nschulz@ninyoandmoore.com)
David Mark, Orange County Water District, Fountain Valley, CA
(dmark@ocwd.com)

C: Data/Maneck/Northrop Y-12/Appr EQC RAP



EXHIBIT 36

1 SUPERIOR COURT OF THE STATE OF CALIFORNIA
2 FOR THE COUNTY OF ORANGE, CIVIL COMPLEX CENTER

3
4 -----
5 ORANGE COUNTY WATER DISTRICT,)
6 Plaintiff,)
7 vs.) No. 04CC00715
8 NORTHROP CORPORATION, et al.,) VOLUME II
9 Defendants.)
10 -----)
11 AND ALL RELATED CROSS ACTIONS.)
12 -----
13
14
15

16 Continued Deposition of ROY L. HERNDON,
17 at 650 Town Center Drive, Costa Mesa,
18 California, commencing at 9:41 A.M.,
19 Tuesday, June 5, 2007 before
20 Cathryn L. Baker, CSR No. 7695.

21
22
23
24
25 PAGES 205 - 387

1 know -- I would have to look further as to whether they
2 would be useful in evaluating specific contaminant
3 migration.

4 Q. Do you have any concerns that the additional
5 recharge water that you're putting in through the GWRS
6 will exacerbate the flow of contaminants, either
7 laterally westward or vertically?

10:34 AM

8 MR. MILLER: Counsel, the question as asked
9 assumes that the recharge water from GWRS is additional
10 water. The witness has previously explained that's not
11 a correct assumption. So you are asking an internally
12 contradictory question and you're assuming facts not in
13 evidence.

14 THE WITNESS: There have been extensive
15 studies done in a permitting process to allow the GWRS
16 to be built and become operational. And there's nothing
17 that's been found to indicate that this water would do
18 anything other than improve groundwater quality in the
19 groundwater basin.

20 BY MR. SMITH:

21 Q. Have any of the studies been designed to
22 determine -- strike that.

10:36 AM

23 Have any of the studies that you referred to
24 actually looked at the issue of spreading contamination?

25 A. Close to an earlier question. I didn't come

1 prepared specifically to look at what evaluations were
2 done, in terms of -- if any, in terms of looking at the
3 spread of contamination. I'm not prepared to answer
4 that.

5 Q. So you don't know one way or the other as you
6 sit here today?

10:36 AM

7 A. I don't know.

8 Q. As a result of your isotope studies were any
9 drinking water wells required to be closed?

10:36 AM

10 A. No.

11 Q. I asked you a lot of questions yesterday about
12 information that you had about Northrop employees doing
13 certain things at Y-12. Today I'd like to ask you if
14 you have any information that Northrop had any corporate
15 policies which authorized the release of any hazardous
16 materials at Y-12?

10:37 AM

17 A. I didn't search out any documents or review
18 any documents that might bear on that; therefore, I have
19 no evidence. I haven't reviewed anything personally
20 that would address that, so I have no answer to that.

21 Q. As the person most knowledgeable at the OCWD,
22 do you have any information that any corporate policies
23 of Northrop in any way contributed to the release of
24 VOCs at Y-12?

10:37 AM

25 A. This would be a formal corporate policy?

1 Q. Yes.

2 A. Somehow has been communicated outward from
3 some higher up?

4 Q. Whenever the higher-ups direct anything that 10:38 AM
5 is wrong, I want to know about it.

6 A. Right. I haven't -- I haven't come across any
7 documents, nor did I try to find any.

8 Q. In all your years of dealing with Northrop 10:38 AM
9 people at Y-12 or EMD, which is another site right
10 across the street, have you come across any information
11 that indicates that management or senior management at
12 Northrop Grumman has any policies which encourage or
13 allowed the release of hazardous chemicals into the
14 ground?

15 A. Well, my experience over the years dealing
16 with the Y-12 facility is that Northrop management has
17 not been proactive at the Y-12 facility and has allowed
18 the spread of VOCs into the groundwater.

19 Q. I didn't ask about cleanup activities. I'm 10:39 AM
20 asking about the release activities.

21 A. Okay. I guess I was considering that a
22 release, because my understanding is that the chemicals
23 have moved offsite from the Y-12 facility.

24 MR. MILLER: Counsel, the question was what it
25 was. The witness interpreted it to require the

1 information he gave. You need to ask a better question.

2 BY MR. SMITH:

3 Q. Do you have any information that management or 10:40 AM
4 senior management at Northrop Grumman had any policies
5 that in any way contributed to the release of any VOCs
6 into the ground at Y-12?

7 A. I think I answered that question. I thought I
8 answered that same question.

9 Q. When you say that management hasn't been 10:40 AM
10 proactive with regard to any aspect of the contamination
11 issue at the property, are you referring to action by
12 management after they closed the facility in 1994, I
13 believe it was?

14 A. The documents I've reviewed, I believe,
15 generally occur after 1994, so, yes.

16 Q. Are you aware -- are you critical of any of 10:41 AM
17 the conduct of management of Northrop before 1994?

18 A. I didn't seek out documents, nor have I seen
19 any prior to 1994, so I have no understanding of what
20 Northrop did or what Northrop management policies were
21 prior to 1994.

22 Q. When you say Northrop has not been proactive 10:41 AM
23 enough at the site, what do you mean?

24 MR. MILLER: That calls for a narrative.

25 Give a reasonably short answer and he'll

1 T-h-i-b-e-a-u-l-t, executive officer, responding to a
2 letter and report dated June 4, 2004 with groundwater
3 investigation results and cleanup and abatement order,
4 the number of which is specified. And it's for the
5 Northrop facility we're calling Y-12.

6 Did you want him to read the bracketed portion
7 into the record, Counsel?

8 MS. McKEITH: Yes, I would. Thank you,
9 Counsel.

10 THE WITNESS: The bracketed portion states,
11 "Based upon these results and previous analytical
12 results of samples obtained from wells at the site, it
13 appears that no further investigations downgradient of
14 the former Y-12 facility are necessary at this time, and
15 that sufficient characterization of VOCs, paren,
16 volatile organic compounds, end paren, in groundwater
17 has been accomplished in order to initiate groundwater
18 remediation."

19 BY MS. McKEITH:

20 Q. As you sit here today, do you recall -- does
21 this help to refresh your recollection of my earlier
22 questioning about whether the Orange County Water
23 District issued or served or communicated any objections
24 to Mr. Thibeault in response to this letter?

02:50 PM

25 A. Yes. I recall a letter to this effect. And

1 in fact, I had reviewed this letter prior to coming
2 here -- as part of preparing for this depo.

3 Q. My question, however, was whether this 02:51 PM
4 refreshes your recollection as to whether OCWD objected
5 to the conclusion of Mr. Thibeault in this letter?

6 A. I don't recall that the District objected. I
7 don't recall, and have no -- I have no recollection that
8 we objected to this letter.

9 Q. As you sit here today, are you aware of any 02:51 PM
10 groundwater investigation that the Regional Board has
11 ordered Northrop to undertake that has not been
12 undertaken?

13 A. As it relates to the Y-12 facility?

14 Q. All my questions only relate to the Y-12 02:51 PM
15 facility, as your counsel has repeatedly reminded me is
16 a scope of this deposition.

17 MR. MILLER: I'm not a potted plant. I have
18 to have some function here.

19 THE WITNESS: I am not aware of any case where
20 Northrop has not ultimately complied with directives
21 from the Regional Board relating to the Y-12 facility.

22 BY MS. McKEITH:

23 Q. With respect to soil investigation, are you 02:52 PM
24 aware of any directives of the Regional Board that, as
25 we sit here today, Northrop has not complied with?

1 A. Based on the documents I've reviewed, I'm not
2 aware of any noncompliance, ultimate -- essentially,
3 Northrop ultimately responded to the Regional Board's
4 directives relating to soil.

5 Q. And I realize that your counsel does not like 02:52 PM
6 me treading down this road again, but I am trying to
7 better understand what the delay that you believe
8 Northrop engaged in at the facility. I'd like to know,
9 as you sit here today, how that delay has manifested an
10 impact to the Orange County Water District?

11 MR. MILLER: It's argumentative. It assumes
12 facts not in evidence, and it calls for evidence outside
13 the scope of the notice. And a narrative. This is not
14 a damage deposition.

15 MS. McKEITH: I was not the person who opened
16 the door on this issue, Counsel, so I believe I have a
17 right to follow up on this question.

18 MR. MILLER: The fact that someone asked a
19 question the way they did, doesn't mean that you can
20 follow it like pulling on a string to the ends of the
21 earth and just venture off on something that isn't
22 covered by the notice. We're not here to discuss the
23 remediation project, which is the principal damage
24 claim, or damages generally.

25 MS. McKEITH: Okay. I'll just renew the fact

1 that my understanding of the depo notice is obviously
2 broader than yours, and we'll have Mr. Herndon or
3 another appropriate PMK come back and take our time
4 again to answer these questions.

5 MR. MILLER: Well, since we currently have 20
6 or 30 days ahead of us, it's going to be awhile before
7 we get to a new topic.

8 MR. MORTL: So I'm clear on the record, is the
9 witness instructed not to answer the last question?

10 MR. MILLER: I didn't instruct him not to
11 answer. The record is clear. But I'm also suggesting
12 that if the question gets corrected, I won't have to
13 object.

14 BY MS. McKEITH:

15 Q. Did you understand my question, Mr. Herndon?

02:54 PM

16 A. I believe you had asked almost the identical
17 question previously, and so I will stay with my prior
18 answer to that. I have no further answer than what I've
19 given earlier.

20 Q. Okay. I'm just getting old, I guess, because
21 I want to make sure that I've covered everything that
22 you're aware of that is attributable, that -- costs or
23 other consequences to the Orange County Water District
24 attributable to the delay that you criticized Northrop
25 for earlier today.

02:55 PM

EXHIBIT 37

1 board?

2 A No, not that I'm aware of.

3 Q You said that the Y12 facility's in

4 investigation and remediation.

5 Have you had an opportunity to personally

6 review the RAP, the remediation action plan, that

7 has been submitted for that site?

8 A I have not reviewed the most recent one,

9 but I have reviewed previous ones.

10 Q Are you still in the line of authority

11 with regard to that site?

12 A Yes.

13 Q Ann reports to you?

14 A Yes.

15 Q I'm going to be careful here in the

16 examination, because that's an important piece of

17 remediation for my client right now, but -- so I

18 don't want to do anything that will impact that. On

19 the other hand, I need to get the facts to defend

20 myself as to his case.

21 So I gotta ask you a few questions about

22 it. And you tell me if anything -- and I see you

23 don't have a lawyer here, so let me play lawyer here

24 objectively a little bit.

25 Anything that's part of your deliberative

1 process, you know, currently that -- that you want
2 to keep confidential because you haven't made up
3 your mind or something and -- and don't want to
4 answer, let me know, and we can talk about that off
5 record and decide what to do. If you feel
6 comfortable in ask -- answering the questions, then
7 please do so.

8 What's your understanding of the current
9 status of the most recent RAP that Northrop Grumman
10 submitted for remediation of that site?

11 A I don't even recall what their plan is --

12 Q That's okay.

13 A -- or was.

14 Q Who are the people who are responsible on
15 a day-to-day basis for oversight to ensure that
16 Northrop Grumman -- Grumman is actively doing what
17 the board wants them to do out there?

18 A Ann Sturdivant works closely with Maneck
19 on those projects.

20 Q Those two.

21 Anybody else?

22 A No. That would be it.

23 Q Has Ann Sturdivant informed you of any
24 dissatisfaction or complaints with Northrop
25 Grumman's actions on Y12?

1 A No.

2 Q Has Maneck Chichgar informed you directly
3 or indirectly of any dissatisfaction with the pace
4 of progress by Northrop Grumman with regard to the
5 Y12 remediation?

6 A No.

7 Q Do you have any information that Northrop
8 Grumman is playing hide the ball or trying to
9 mislead the board in any aspect of its work in
10 remediating Y12?

11 MR. MILLER: Objection. Overbroad.
12 Compound. Vague.

13 THE WITNESS: No.

14 BY MR. SMITH:

15 Q Do you -- now, the board does charge
16 Northrop Grumman for the costs that the board staff
17 incurs in the oversight operations, does it not?

18 A Correct.

19 Q Has Northrop timely reimbursed the board
20 for the money that the board is owed in that regard?

21 A I don't know, because I'm not involved in
22 that process. Ann handles that. But I have not
23 heard of any information to indicate that they have
24 not been paying.

25 Q As soon as I asked the question, I -- I --

1 I didn't know the answer to it, so I was going to
2 tell you a check will be in the mail, but I -- I
3 guess we'll have to ask other people to make sure
4 that we're current.

5 Is there any type of periodic briefing
6 that you receive from Ann Sturdivant or Maneck
7 Chichgar about the status of site remediation at
8 Y12?

9 A No.

10 Q Do you have -- just in terms of the
11 overall basis, looking at the -- the area that the
12 Orange County Water District is proposing to
13 remediate, have you had any meetings with them since
14 this October 2005 report as to whether remedi- --
15 remediating individual sites and letting nature take
16 care of the rest might be an effective alternative?

17 (Whereupon Mr. Movaghar entered the
18 deposition proceedings at this point in
19 time.)

20 MR. MILLER: Objection. Compound. Lacks
21 foundation.

22 THE WITNESS: No.

23 BY MR. SMITH:

24 Q Have you had any discussions at any time
25 with the Orange County Water District folks about

1 confusing --

2 Q Okay.

3 A -- to me. I --

4 Q How about apply it -- for it?

5 A It's -- it's -- the most common scenario
6 is we would inform an entity that they need to
7 submit an application for our oversight, and then
8 they generally just do it.

9 Q Okay.

10 A I don't know what happened in this case.

11 Q Is this site on your SLIC list,
12 Exhibit 42?

13 A It should be.

14 MR. HOLZER: And, Bob, this is Steve
15 Holzer, I'm sorry, but could you give me the address
16 for that site again.

17 MR. SMITH: 1730 North Orange- --
18 Orangethorpe Park, Anaheim.

19 MR. HOLZER: Thank you.

20 THE WITNESS: I don't see it here.

21 MR. SMITH: Well, maybe it's really
22 Fullerton.

23 Well, I don't see it there either.

24 BY MR. SMITH:

25 Q Is it possible that there may be some

1 sites that have been inadvertently omitted from the
2 SLIC list?

3 A Yes, we find that occasionally.

4 Q Is the former Kester Solder site in
5 remediation now, as far as you know?

6 A We are actively overseeing activities at
7 that site. I don't recall if actual remediation is
8 occurring yet or not.

9 Q Who would know that SLIC here?

10 A Maneck Chichgar.

11 Q Has he reported to you any dissatisfaction
12 with the progress of investigation or remediation at
13 the Kester Solder site?

14 A No.

15 Q Has Ann Sturdivant expressed any
16 dissatisfaction at all with the progress of
17 investigation or remediation at this site?

18 A No.

19 Q Has anybody here at the board expressed
20 any dissatisfaction with Northrop Grumman's progress
21 of investigating and/or remediating the former
22 Kester Solder site?

23 A Not that I'm aware of.

24 Q Today we've talked about the EMD site at
25 500 East Orangethorpe, the Y12 site at 301 East

EXHIBIT 38

Facility Closure Plan

Northrop Grumman Kester Anaheim Facility

1730 North Orangethorpe Park
Anaheim, California 92801

Submitted to:
The City of Anaheim Fire Department
201 S. Anaheim Blvd., Suite 300
Anaheim, CA 92805

30 JULY, 2002

Facility Closure Plan

Northrop Grumman Kester Anaheim Facility

Purpose

The purpose of the Facility Closure Plan (Plan) is to provide the City of Anaheim Fire Department, Environmental Protection Section (Department) information on the removal of hazardous materials and process equipment in storage at the Northrop Grumman Kester Anaheim facility (Facility) located at 1730 North Orangethorpe Park, Anaheim, California. This plan will outline the measures to be taken by the Facility to ensure that hazardous materials are safely managed and disposed of during the removal activities. Prior to closure, the Plan must be submitted to and approved by the Department. Should any changes be necessary to the Plan, addenda will be added as needed and approved by the Department.

Introduction

The Facility has been in operation at its current location since 1968 and is engaged in the production of solder alloys, fluxes, masking compounds and other soldering chemicals. The Facility site encompasses approximately 39,000 ft² of property. Offices and production areas are housed within a single building containing a total area of approximately 22,000 ft² under roof. It is located in an industrial park with other light manufacturing businesses. A site map showing the location of the Facility and surrounding area is included as Appendix A to this Plan.

The Facility stores hazardous materials in small non-bulk containers, transportable bulk containers, an above ground storage tank and four (4) underground storage tanks (UST). In addition, the Facility generates and stores small quantities of hazardous waste prior to transport off-site for proper disposal. There have been no major spills of hazardous materials at the Facility under the current ownership. A detailed list of the types and quantities of hazardous materials stored at the facility is included as Appendix B to this Plan.

Northrop Grumman Kester has decided to cease the production of solder alloys and other processes at the Facility. However, the current owner of the property, Litton Systems, Inc. has not yet reached a decision on what the future use of the property will be. It is anticipated that the ownership of the property will remain unchanged for some period after the cessation of the solder production and other process formerly conducted at the Facility. Corporate information, including a list of the Northrop Grumman Kester corporate officers is included as Appendix C to this Plan.

The Facility will cease active production as of August 5, 2002 and will begin closure of the facility upon receiving approval from the Department. It is anticipated that closure activities can be completed within 30 days after receiving approval from the Department. The Facility will request a final walk-through by the Department when all closure activities have been completed.

Procedures

Equipment:

All equipment pertaining to the production of solder alloys, fluxes, masking compounds and other soldering chemicals will be cleaned and removed from the Facility. Salvageable equipment will be shipped to other Northrop Grumman Kester facilities for use in production, storage or repair. A complete list of the effected equipment is included as Appendix D to this Plan.

Some equipment may be unusable and will be scrapped. Scrapped equipment that was used in the production, handling or storage of hazardous materials will be characterized and properly managed in accordance with applicable federal, state and local requirements. Scrap flooring and other large metal surfaces and debris that may have legitimate scrap metal value may be recycled. Large debris, which may be hazardous, will be disposed of in a secure landfill in accordance with applicable Land Disposal Restrictions.

UST Removal:

As part of the Facility Closure, the four (4) UST's used for the storage of ethanol and isopropyl alcohol will be removed. Northrop Grumman Kester will utilize a contractor licensed by the State of California for UST removal (Contractor). All work pertaining to the removal of the UST's will be performed in accordance with the Specifications and Requirements of the Department's Underground Storage Tank Removal Guidelines. A UST Removal Permit will be applied for by the Contractor under a separate cover from this Plan.

Hazardous Materials Removal:

All hazardous materials currently in storage at the Facility will be removed. Salvageable raw material chemicals and finished goods will be shipped to other Northrop Grumman Kester facilities for use in production or interim storage prior to shipment to customers. Some unused hazardous materials may be returned to the original vendor for resale. Other hazardous materials may be unusable and will be scrapped. Scrapped hazardous materials will be characterized and properly managed in accordance with applicable federal, state and local requirements.

Facility Decontamination:

After the equipment and hazardous materials have been removed from the facility, the remaining structures and surfaces will be cleaned using a combination of cleaning agents, detergents and other physical methods. This may include, but is not limited to; vacuuming, sweeping, scraping, pressure washing, shot blasting, abrading, steam cleaning, etc., as appropriate. Since the Facility will retain its original ownership, cleaning procedures will continue until the gross visible contamination has been removed. Some indelible stains to surfaces, which do not pose a hazard to human health or the environment, may remain after decontamination has been completed.

To facilitate a timely and efficient closure, unused portions of the facility may be decontaminated while operations continue in other areas. It is anticipated that Northrop Grumman Kester employees who have received the appropriate training for handling hazardous substances will be used to perform the cleaning activities. If outside contractors are hired, then Northrop Grumman Kester will ensure that they have also received the appropriate training.

The Facility will employ reasonable means to ensure that no hazardous materials are released during the cleaning procedures. Rinse waters generated during the washing procedures will be collected and staged in containers on-site prior to disposal at an approved off-site treatment facility. Air emissions will be controlled through the use of filters and other operational means.

Wastewaters collected during the decontamination operations will be sent to an approved aqueous treatment facility. Solids and contaminated debris will be collected and sent to an approved land disposal facility for treatment and disposal. All waste streams will properly profiled and approved by the receiving facility prior to shipment using a licensed transporter. The Facility will obtain prior notice from the off-site treatment and disposal facilities that they have the appropriate permits to accept and treat the wastes as profiled. Northrop Grumman Kester will maintain all regulatory recordkeeping and reporting paperwork at its corporate headquarters for the specified retention times.

Additional Permit(s) Required:

Other than the UST removal permit referenced in the "Procedures" section of the Plan, the Facility does not anticipate that any additional permit(s) will be required during the closure of the Facility. No decontamination procedures done to the structure itself are anticipated during closure. The facility owner will need to maintain electrical service to the facility, therefore we do not anticipate removing the electrical service per the City of Anaheim Building Division regulations for closed properties.

Post Closure Report:

Northrop Grumman Kester will submit to the Department a post closure report within thirty (30) days after the completion of closure activities. The report will include a statement confirming compliance with all of the items in the closure plan, including any approved changes contained in addenda, if needed. Any modifications or departures from the approved closure plan will be noted along with a detailed explanation of the need and potential consequences of the change. Any analytical laboratory results produced during the closure activities will be included in the post closure report. Documentation will be provided of the disposition of the hazardous materials inventory, including salvageable raw material chemicals, finished goods, and scrapped hazardous materials and wastes.

EXHIBIT 39



Aug 29 2008
8:44AM

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Attorneys for Defendant,

NORTHROP GRUMMAN SYSTEMS CORPORATION

(erroneously named as Northrop Corporation and Northrop

Grumman Corporation)

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF ORANGE, CIVIL COMPLEX CENTER

ORANGE COUNTY WATER DISTRICT,

Plaintiff,

v.

NORTHROP CORPORATION; NORTHROP
GRUMMAN CORPORATION; AMERICAN
ELECTRONICS, INC.; MAG AEROSPACE
INDUSTRIES, IC.; GULTON INDUSTRIES,
INC.; MARK IV INDUSTRIES, INC.; EDO
CORPORATION; AEROJET-GENERAL
CORPORATION; MOORE BUSINESS
FORMS, INC.; AC PRODUCTS, INC.;
FULLERTON MANUFACTURING
COMPANY; FULLERTON BUSINESS PARK
LLC; and DOES 1 through 400, inclusive,

Defendants.

AND RELATED CROSS-COMPLAINTS.

CASE NO. 04CC00715

(Assigned for all purposes to
Hon. Thierry P. Colaw, Dept. CX-104)

**NORTHROP GRUMMAN SYSTEMS
CORPORATION'S RESPONSES TO
PLAINTIFF'S SPECIAL
INTERROGATORIES SET SEVEN**

PROPOUNDING PARTY: Plaintiff ORANGE COUNTY WATER DISTRICT

RESPONDING PARTY: Defendant NORTHROP GRUMMAN SYSTEMS CORPORATION

SET NUMBER: Seven

///

///

Pursuant to California *Code of Civil Procedure* Section 2030, defendant NORTHROP GRUMMAN SYSTEMS CORPORATION (hereinafter “NGSC”) provides these responses to plaintiff ORANGE COUNTY WATER DISTRICT’s Seventh Set of Special Interrogatories, as follows:

PRELIMINARY STATEMENT

These responses were made after diligent inquiry and investigation by NGSC. However, they reflect only NGSC’s current knowledge, information or belief. The investigation is ongoing and NGSC anticipates that it may discover additional facts responsive to OCWD’s Seventh Set of Special Interrogatories (“Interrogatories”). Accordingly, NGSC reserves its right to amend or supplement these responses and further reserves its right to use any new, different or omitted facts responsive to these Interrogatories anytime in the course of this litigation including, but not limited to, in pleadings, hearings and at trial.

GENERAL OBJECTIONS

NGSC objects to these interrogatories to the extent that they seek information as to sites that are not alleged in the operative complaint to be sources of VOC releases. Despite ample opportunity to amend the complaint, Plaintiff has failed to do so and the requested discovery is hence irrelevant in a discovery sense. NGSC objects to these interrogatories to the extent that they seek information that is not relevant and not likely to lead to the discovery of admissible evidence.

NGSC objects to these interrogatories to the extent that they are overly broad, burdensome and oppressive in terms of their scope and time-frame.

NGSC objects to these interrogatories on the grounds that the terms “YOU” or “YOUR,” as defined by OCWD, are overly broad and include business entities and individuals, which are not parties herein. Accordingly, NGSC responds to this interrogatory on behalf of NGSC and only NGSC.

NGSC objects to these interrogatories to the extent that they seek information protected from disclosure by the attorney-client privilege.

NGSC objects to these interrogatories to the extent that they seek information protected from disclosure by the attorney work product doctrine.

1 NGSC objects to these interrogatories to the extent that they seek information protected
2 from disclosure by the joint defense privilege.

3 NGSC objects to these interrogatories to the extent that they violate NGSC, other parties or
4 non-parties' rights to privacy.

5 Each of the following responses is provided subject to and without waiving any of the
6 general objections stated above.

7 **RESPONSE TO SPECIAL INTERROGATORIES**

8 **SPECIAL INTERROGATORY NO. 304:**

9 What constituents did YOU monitor for with the ISCO sampling systems? ("YOU" or
10 "NORTHROP" refers to responding defendant [including Northrop Corporation, Northrop
11 Grumman Corporation and Northrop Grumman Systems Corporation], its employees, agents,
12 attorneys, consultants, and anyone else acting on its behalf. "ISCO" refers to the real-time
13 sampling system discussed in the deposition of Ken Erwin.)

14 **RESPONSE TO SPECIAL INTERROGATORY NO. 304:**

15 NGSC incorporates herein by this reference all general responses and objections set forth
16 above. NGSC objects to the Interrogatory to the extent that it is overly broad, compound,
17 burdensome and oppressive in terms of its scope and time-frame. NGSC further objects because
18 the term "ISCO sampling systems" is vague and ambiguous, not adequately defined and not
19 limited to a specific site. Subject to and without waiving its objections, NGSC responds as
20 follows: According to correspondence submitted by Northrop to the Orange County Sanitation
21 Department ("OCSD") dated July 2, 1992 (Bates # NGSC 5865), Northrop engaged in an
22 industrial wastewater monitoring program under OCSD Permit # 2-1-512 in which samples of
23 select constituents were taken and analyzed at the "Last Stage of Clarifier" at Northrop's former
24 Y-12 facility located at 301 E. Orangethorpe, Anaheim, California (See Bates # NGSC 5867).
25 The industrial wastewater monitoring program sampled for heavy metals (Silver, Cadmium,
26 Chromium, Copper, Nickel, Lead and Zinc), cyanide, total toxic organics and oil & grease (See
27 Self-Monitoring Report For Total Toxic Organics, Cyanide, and Oil & Grease at Bates # NGSC
28 3827; See also Semi-Annual Self-Monitoring Report for Cyanide at Bates # NGSC 5866 and

Quarterly Self-Monitoring Report for Heavy Metals at Bates # NGSC 5867). NGSC has made a diligent inquiry and investigation of files related to its former sites located at 500 E. Orangethorpe Avenue, Anaheim, California (known as "EMD"), 1730 North Orangethorpe Park, Anaheim, California (known as "Kester") and 1401 E. Orangethorpe Avenue, Fullerton, California (known as "Y-19") and found no references to any "ISCO sampling systems" or wastewater monitoring program in place at these other sites. Discovery and Investigation is on-going.

SPECIAL INTERROGATORY NO. 305:

Did YOU monitor for SOLVENTS with the ISCO sampling systems? ("SOLVENTS" means any product which contains one or more of the following chemicals, trichloroethylene (TCE), tetrachloroethylene (a.k.a. perchloroethylene) (PCE), 1,1-dichloroethylene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), 1,4-dioxane (1,4-D), 1,1,1-trichloroethane (1,1,1-TCA), 1,1,2-trichloroethane (1,1,2-TCA), 1,2,3-trichloropropane (TCP), 1,1-dichloroethane (1,1-DCA), methylene chloride, trans-1, 2-dichloroethylene(trans-1, 2-DCE) and cis-1, 2-dichloroethylene (cis-1,2-DCE).

RESPONSE TO SPECIAL INTERROGATORY NO. 305:

See Response to Special Interrogatory No. 304.

SPECIAL INTERROGATORY NO. 306:

In samples taken from wastewater treatment at the Y-12 site, 301 E. Orangethorpe Avenue, Anaheim (as described by Ken Erwin at his deposition taken on February 11, 2008), for what constituents did YOU sample?

RESPONSE TO SPECIAL INTERROGATORY NO. 306:

See Response to Special Interrogatory No. 304.

SPECIAL INTERROGATORY NO. 307:

IDENTIFY all employees who "mixed industrial solvents, primarily PCE" at Kester (per Orion). (When used with respect to a PERSON who is an individual, the word "IDENTIFY" means to state the name, present or last known phone number, present or last known business address, present or last known employer, and the present or last known position held with such employer.)

RESPONSE TO SPECIAL INTERROGATORY NO. 307:

NGSC incorporates herein by this reference all general responses and objections set forth above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further objects because the term “mixed” is vague and ambiguous and the Request calls for the preparation of an employee list which does not presently exist. Subject to and without waiving its objections, NGSC responds as follows: See Northrop’s 3rd Supplemental Response to Special Interrogatory No. 201 served on March 4, 2008. NGSC believes, based on reviewing documents pertaining to its former site located at 1730 North Orangethorpe Park, Anaheim, California, that the following individuals worked at 1730 North Orangethorpe Park, Anaheim, California and may have knowledge about solvents used at the site: Dan Hall, Operations Manager; Brian McHenry, Safety & Environmental Director; Jesse McClellan, Safety & Environmental Facilitator; Patrick Kennedy; and Cari Moore. NGSC has not been able to obtain detailed information regarding these former employees because Kester Solder, a Litton subsidiary, ceased operations at 1730 North Orangethorpe Park, Anaheim, California in 2002 and the business was sold in February 2004. Business records were delivered to the new owner at the time of sale.

SPECIAL INTERROGATORY NO. 308:

IDENTIFY all employees at the Y-19 site who worked with TCE.

RESPONSE TO SPECIAL INTERROGATORY NO. 308:

NGSC incorporates herein by this reference all general responses and objections set forth above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further objects because the term “worked” is vague and ambiguous and the Request calls for the preparation of an employee list which does not presently exist. NGSC further objects to the extent that the Interrogatory violates NGSC’s and non-parties’ rights to privacy. Subject to and without waiving its objections, NGSC responds as follows: See Response to Special Interrogatory No. 222 served December 14, 2007 in response to Special Interrogatories (Set Six). Northrop is not presently aware of any TCE being used at its former site located at 1401 E. Orangethorpe Avenue,

Fullerton, California (known as “Y-19”).

SPECIAL INTERROGATORY NO. 309:

IDENTIFY all employees at the Y-19 site who worked with TCA.

RESPONSE TO SPECIAL INTERROGATORY NO. 309:

NGSC incorporates herein by this reference all general responses and objections set forth above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further objects because the term “worked” is vague and ambiguous and the Request calls for the preparation of an employee list which does not presently exist. NGSC further objects to the extent that the Interrogatory violates NGSC’s and non-parties’ rights to privacy. Subject to and without waiving its objections, NGSC responds as follows: See Response to Special Interrogatory No. 248 served December 14, 2007 in response to Special Interrogatories (Set Six). The site located at 1401 E. Orangethorpe Avenue, Fullerton, California (known as “Y-19”) was managed as part of Northrop EMD based at 500 E. Orangethorpe in Anaheim, California. NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman Sealander (Northrop’s designated Person Most Knowledgeable for its former EMD and Y-12 sites) may have relevant information related to this Interrogatory. These individuals have already been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by the District. He testified that hundreds of employees worked at the EMD facility (See Erwin Depo. Part 1, 26:5). Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed on November 13th, 2007 by the District. The deposition transcripts for these individual depositions are equally available to the District for review. Furthermore, NGSC is informed and believes that the following individuals may have knowledge regarding former Northrop employees that may have “worked with TCA” at the Y-19 site (contact information provided was obtained from 1992 records):

Dave Alexander, Tool Engineer Northrop Electronics Division (“NED”) (1992 Unknown); **Matthew Barenfeld**, Environmental Engineer II NED (9/10/90 Unknown),

1 PRVY-Controlled/Privacy; **John Barth**, Maintenance Worker Electro-
2 Mechanical Division ("EMD") (11/9/66 -7/31/PRVY-Controlled/Privacy; **Diana**
3 **Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/PRVY-Controlled/Privacy
4 ; **Art Boston**, Plant Maintenance Manager (2/14/52 1/31/84); PRVY-Controlled/Privacy
5 ; **Kalim Butt**; Environmental Control Engineer (1/4/1988 Unknown) PRVY-Controlled/Privacy
6 ; **Mark Cordero**, Calibration Tech. - NED (Unknown);
7 PRVY-Controlled/Privacy; **Dan DeOrio**, Facility Engineer EMD (1/3/1967-
8 8/30/91); PRVY-Controlled/Privacy; **Robert Dobias**, Facility Engineer
9 EMD (8/10/1981 2/8/91); PRVY-Controlled/Privacy; **Elisabeth**
10 **Garthoffner**, Facilities Engineer Electronics Systems Division ("ESD"); PRVY-Controlled/Privacy
11 ; **Ruben Guitierrez**, Hazardous Waste Handler EMD & Y-12; PRVY-Controlled/Privacy
12 ; **Estes Kelley**, Maintenance Supervisor EMD (8/25/1966
13 7/21/1989); PRVY-Controlled/Privacy; **Benjamin F. Kimball**, Maintenance
14 Supervisor EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy
15 ; **David Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy PRVY-Controlled/Privacy
16 PRVY-Controlled/Privacy; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy
17 ; **Clair Mix**, Health & Safety Engineer Northrop Aircraft Division
18 ("NAD") (Unknown); **Tayler Myers**, Engineer Specialist Northrop Electronics Division
19 ("NED") (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987- 1/11/1991); PRVY-Controlled/Privacy
20 ; **Dennis Pedersen**, Facilities Manager [Northrop Site
21 Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy PRVY-Controlled/Privacy; **Stephen Raab**,
22 Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy
23 ; **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984 4/20/1990); PRVY-Controlled/Privacy
24 ; **Sue Sullivan**, Manager Safety & Environmental
25 Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy
26 ; **Robert Taylor**, Facilities Engineer [Specific Anaheim Site Unknown] (7/24/1961
27 7/31/1990); PRVY-Controlled/Privacy; **Loren Thompson**, Sr. Facilities
28 Engineer ESD (Unknown); PRVY-Controlled/Privacy; **Jim Tucker**,

1 Administrator Maintenance Contracts - ESD (Unknown); **Jim Watson**, Environmental Engineer
2 EMD (4/7/1984 4/3/1987); **PRVY-Controlled/Privacy**; **Bob Wilhite**,
3 Manufacturing Engineer Manager EMD (Unknown); **PRVY-Controlled/Privacy**;
4 and **Ed Wylie**, Product Line Manager (Northrop Site and Employment Dates Unknown). After
5 diligent investigation, Northrop is presently unaware of any additional names of employees who
6 may have “worked” with TCA at the former Y-19 facility or may have information relevant to this
7 Interrogatory.

8 **SPECIAL INTERROGATORY NO. 310:**

9 IDENTIFY all employees who operated the quench tanks at the Y-12 site.

10 **RESPONSE TO SPECIAL INTERROGATORY NO. 310:**

11 NGSC incorporates herein by this reference all general responses and objections set forth
12 above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior
13 interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further
14 objects because the Request calls for the preparation of an employee list which does not presently
15 exist. NGSC further objects to the extent that the Interrogatory violates NGSC’s and non-parties’
16 rights to privacy. Subject to and without waiving its objections, NGSC responds as follows:
17 NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman
18 Sealander (Northrop’s designated Person Most Knowledgeable for its former “EMD” and “Y-12”
19 sites) may have relevant information related to this Interrogatory. These individuals have already
20 been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by
21 the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on
22 April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed
23 on November 13th, 2007 by the District. The deposition transcripts for these individual
24 depositions are equally available to the District for review. Furthermore, NGSC is informed and
25 believes that the following individuals may have knowledge regarding former Northrop employees
26 that may have “operated the quench tanks at the Y-12 site” (contact information provided was
27 obtained from 1992 records):

28 **Dave Alexander**, Tool Engineer NED (1992 Unknown); **Matthew Barenfeld**,

1 Environmental Engineer II NED (9/10/90 Unknown), PRVY-Controlled/Privacy
2 [REDACTED]; **John Barth**, Maintenance Worker EMD (11/9/66 -7/31/90), PRVY-Controlled/Privacy
3 [REDACTED] **Diana Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90);
4 PRVY-Controlled/Privacy [REDACTED]; **Art Boston**, Plant Maintenance Manager (2/14/52
5 1/31/84); PRVY-Controlled/Privacy [REDACTED]; **Kalim Butt**; Environmental Control Engineer
6 (1/4/1988 Unknown); PRVY-Controlled/Privacy [REDACTED]; **Mark Cordero**,
7 Calibration Tech. - NED (Unknown); PRVY-Controlled/Privacy [REDACTED]; **Dan DeOrio**,
8 Facility Engineer EMD (1/3/1967-8/30/91); PRVY-Controlled/Privacy [REDACTED];
9 **Robert Dobias**, Facility Engineer EMD (8/10/1981 2/8/91); PRVY-Controlled/Privacy [REDACTED]
10 [REDACTED]; **Elisabeth Garthoffner**, Facilities Engineer ESD; PRVY-Controlled/Privacy [REDACTED]
11 [REDACTED]; **Ruben Guitierrez**, Hazardous Waste Handler EMD & Y-12; PRVY-Controlled/Privacy [REDACTED]
12 [REDACTED]; **Estes Kelley**, Maintenance Supervisor EMD (8/25/1966
13 7/21/1989); PRVY-Controlled/Privacy [REDACTED]; **Benjamin F. Kimball**, Maintenance Supervisor
14 EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **David**
15 **Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED]
16 [REDACTED]; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy [REDACTED]
17 [REDACTED]; **Clair Mix**, Health & Safety Engineer NAD (Unknown); **Tayler Myers**, Engineer
18 Specialist NED (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987-
19 1/11/1991); PRVY-Controlled/Privacy [REDACTED]; **Dennis Pedersen**, Facilities Manager
20 [Northrop Site Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED];
21 **Stephen Raab**, Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy [REDACTED]
22 PRVY-Controlled/Privacy [REDACTED]; **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984
23 4/20/1990); PRVY-Controlled/Privacy [REDACTED]; **Sue Sullivan**, Manager Safety &
24 Environmental Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy [REDACTED]
25 [REDACTED]; **Robert Taylor**, Facilities Engineer [Specific Anaheim Site Unknown]
26 (7/24/1961 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **Loren Thompson, Sr.**
27 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy [REDACTED]; **Jim**
28 **Tucker**, Administrator Maintenance Contracts - ESD (Unknown); **Jim Watson**, Environmental

1 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy [REDACTED]; Bob
2 Wilhite, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy [REDACTED]
3 [REDACTED]; and Ed Wylie, Product Line Manager (Northrop Site and Employment Dates
4 Unknown). After diligent investigation of files pertaining to Northrop's former Y-12 facility
5 located at 301 E. Orangethorpe, Northrop is presently unaware of any additional names of
6 employees who may have "operated the quench tanks at the Y-12 site" or may have additional
7 information relevant to this Interrogatory.

8 **SPECIAL INTERROGATORY NO. 311:**

9 IDENTIFY all employees who repaired the quench tanks at the Y-12 site.

10 **RESPONSE TO SPECIAL INTERROGATORY NO. 311:**

11 NGSC incorporates herein by this reference all general responses and objections set forth
12 above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior
13 interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further
14 objects because the Request calls for the preparation of an employee list which does not presently
15 exist. NGSC further objects to the extent that the Interrogatory violates NGSC's and non-parties'
16 rights to privacy. Subject to and without waiving its objections, NGSC responds as follows:
17 NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman
18 Sealander (Northrop's designated Person Most Knowledgeable for its former "EMD" and "Y-12"
19 sites) may have relevant information related to this Interrogatory. These individuals have already
20 been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by
21 the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on
22 April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed
23 on November 13th, 2007 by the District. The deposition transcripts for these individual
24 depositions are equally available to the District for review. Furthermore, NGSC is informed and
25 believes that the following individuals may have knowledge regarding former Northrop employees
26 that may have performed maintenance on the quench tanks at the Y-12 site (contact information
27 provided was obtained from 1992 records):

28 Dave Alexander, Tool Engineer NED (1992 Unknown); Matthew Barenfeld,

1 Environmental Engineer II NED (9/10/90 Unknown); PRVY-Controlled/Privacy
2 [REDACTED]; **John Barth**, Maintenance Worker EMD (11/9/66 -7/31/90); PRVY-Controlled/Privacy
3 [REDACTED]; **Diana Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90);
4 PRVY-Controlled/Privacy **Art Boston**, Plant Maintenance Manager (2/14/52
5 1/31/84); PRVY-Controlled/Privacy **Kalim Butt**; Environmental Control Engineer
6 (1/4/1988 Unknown); PRVY-Controlled/Privacy [REDACTED]; **Mark Cordero**,
7 Calibration Tech. - NED (Unknown); PRVY-Controlled/Privacy [REDACTED]; **Dan DeOrio**,
8 Facility Engineer EMD (1/3/1967-8/30/91); PRVY-Controlled/Privacy [REDACTED];
9 **Robert Dobias**, Facility Engineer EMD (8/10/1981 2/8/91) PRVY-Controlled/Privacy [REDACTED]
10 [REDACTED] **Elisabeth Garthoffner**, Facilities Engineer ESD; PRVY-Controlled/Privacy [REDACTED]
11 [REDACTED]; **Ruben Guitierrez**, Hazardous Waste Handler EMD & Y-12; PRVY-Controlled/Privacy [REDACTED]
12 [REDACTED] **Estes Kelley**, Maintenance Supervisor EMD (8/25/1966
13 7/21/1989); PRVY-Controlled/Privacy [REDACTED]; **Benjamin F. Kimball**, Maintenance Supervisor
14 EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **David**
15 **Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED]
16 [REDACTED]; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy [REDACTED]
17 [REDACTED]; **Clair Mix**, Health & Safety Engineer NAD (Unknown); **Tayler Myers**, Engineer
18 Specialist NED (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987-
19 1/11/1991); PRVY-Controlled/Privacy [REDACTED]; **Dennis Pedersen**, Facilities Manager
20 [Northrop Site Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED];
21 **Stephen Raab**, Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy [REDACTED]
22 [REDACTED]; **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984
23 4/20/1990); PRVY-Controlled/Privacy [REDACTED]; **Sue Sullivan**, Manager Safety &
24 Environmental Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy [REDACTED]
25 [REDACTED]; **Robert Taylor**, Facilities Engineer [Specific Anaheim Site Unknown]
26 (7/24/1961 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **Loren Thompson, Sr.**
27 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy [REDACTED]; **Jim**
28 **Tucker**, Administrator Maintenance Contracts - ESD (Unknown); **Jim Watson**, Environmental

1 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy [REDACTED]; Bob
2 Wilhite, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy [REDACTED]
3 [REDACTED]; and Ed Wylie, Product Line Manager (Northrop Site and Employment Dates
4 Unknown). After diligent investigation of files pertaining to Northrop's former Y-12 facility
5 located at 301 E. Orangethorpe, Northrop is presently unaware of any additional names of
6 employees who may have performed maintenance on the quench tanks at the Y-12 site or may
7 have additional information relevant to this Interrogatory.

8 **SPECIAL INTERROGATORY NO. 312:**

9 IDENTIFY all employees who operated the degreaser at the Y-12 site.

10 **RESPONSE TO SPECIAL INTERROGATORY NO. 312:**

11 NGSC incorporates herein by this reference all general responses and objections set forth
12 above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior
13 interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further
14 objects because the Request calls for the preparation of an employee list which does not presently
15 exist. NGSC further objects to the extent that the Interrogatory violates NGSC's and non-parties'
16 rights to privacy. Subject to and without waiving its objections, NGSC responds as follows:
17 NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman
18 Sealander (Northrop's designated Person Most Knowledgeable for its former "EMD" and "Y-12"
19 sites) may have relevant information related to this Interrogatory. These individuals have already
20 been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by
21 the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on
22 April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed
23 on November 13th, 2007. The deposition transcripts for these individual depositions are equally
24 available to the District for review. Northrop's Designated "PMK", Norman Sealander, did not
25 recall the names of employees who operated the degreaser at the former Y-12 facility (see
26 Sealander Deposition Transcript at 133:12-18). Furthermore, NGSC is informed and believes that
27 the following individuals may have knowledge regarding former Northrop employees that may
28 have operated the degreaser at the Y-12 site (contact information provided was obtained from

1992 records):

Dave Alexander, Tool Engineer NED (1992 Unknown); **Matthew Barenfeld**, Environmental Engineer II NED (9/10/90 Unknown), PRVY-Controlled/Privacy [REDACTED]; **John Barth**, Maintenance Worker EMD (11/9/66 -7/31/90), PRVY-Controlled/Privacy [REDACTED]; **Diana Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90); PRVY-Controlled/Privacy [REDACTED]; **Art Boston**, Plant Maintenance Manager (2/14/52 1/31/84); PRVY-Controlled/Privacy [REDACTED]; **Kalim Butt**, Environmental Control Engineer (1/4/1988 Unknown); PRVY-Controlled/Privacy [REDACTED]; **Mark Cordero**, Calibration Tech. - NED (Unknown); PRVY-Controlled/Privacy [REDACTED]; **Dan DeOrio**, Facility Engineer EMD (1/3/1967-8/30/91); PRVY-Controlled/Privacy [REDACTED]; **Robert Dobias**, Facility Engineer EMD (8/10/1981 2/8/91); PRVY-Controlled/Privacy [REDACTED]; **Elisabeth Garthoffner**, Facilities Engineer ESD; PRVY-Controlled/Privacy [REDACTED]; **Ruben Guitierrez**, Hazardous Waste Handler EMD & Y-12 PRVY-Controlled/Privacy [REDACTED]; **Estes Kelley**, Maintenance Supervisor EMD (8/25/1966 7/21/1989) PRVY-Controlled/Privacy [REDACTED]; **Benjamin F. Kimball**, Maintenance Supervisor EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **David Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED]; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy [REDACTED]; **Clair Mix**, Health & Safety Engineer NAD (Unknown); **Taylor Myers**, Engineer Specialist NED (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987- 1/11/1991); PRVY-Controlled/Privacy [REDACTED]; **Dennis Pedersen**, Facilities Manager [Northrop Site Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy [REDACTED] 2680; **Stephen Raab**, Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy [REDACTED]; **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984 4/20/1990); PRVY-Controlled/Privacy [REDACTED]; **Sue Sullivan**, Manager Safety & Environmental Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy [REDACTED]; **Robert Taylor**, Facilities Engineer [Specific Anaheim Site Unknown] (7/24/1961 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **Loren Thompson**, Sr.

1 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy [REDACTED]; Jim
2 Tucker, Administrator Maintenance Contracts - ESD (Unknown); Jim Watson, Environmental
3 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy [REDACTED]; Bob
4 Wilhite, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy [REDACTED]
5 [REDACTED] and Ed Wylie, Product Line Manager (Northrop Site and Employment Dates
6 Unknown). After diligent investigation of files pertaining to Northrop's former Y-12 facility
7 located at 301 E. Orangethorpe, Northrop is presently unaware of any additional names of
8 employees who may have "operated the degreaser" at the Y-12 site or may have additional
9 information relevant to this Interrogatory.

10 **SPECIAL INTERROGATORY NO. 313:**

11 IDENTIFY all employees who repaired the degreaser at the Y-12 site.

12 **RESPONSE TO SPECIAL INTERROGATORY NO. 313:**

13 NGSC incorporates herein by this reference all general responses and objections set forth
14 above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior
15 interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further
16 objects because the Request calls for the preparation of an employee list which does not presently
17 exist. NGSC further objects to the extent that the Interrogatory violates NGSC's and non-parties'
18 rights to privacy. Subject to and without waiving its objections, NGSC responds as follows:
19 NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman
20 Sealander (Northrop's designated Person Most Knowledgeable for its former "EMD" and "Y-12"
21 sites) may have relevant information related to this Interrogatory. These individuals have already
22 been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by
23 the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on
24 April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed
25 on November 13th, 2007. The deposition transcripts for these individual depositions are equally
26 available to the District for review. Northrop's Designated "PMK", Norman Sealander, did not
27 recall the names of employees who operated the degreaser at the former Y-12 facility (see
28 Sealander Deposition Transcript at 133:12-18). Furthermore, NGSC is informed and believes that

the following individuals may have knowledge regarding former Northrop employees that may have performed maintenance on the degreaser at the Y-12 site (contact information provided was obtained from 1992 records):

Dave Alexander, Tool Engineer NED (1992 Unknown); **Matthew Barenfeld**, Environmental Engineer II NED (9/10/90 Unknown), PRVY-Controlled/Privacy [REDACTED]; **John Barth**, Maintenance Worker EMD (11/9/66 -7/31/90), PRVY-Controlled/Privacy [REDACTED]; **Diana Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90); PRVY-Controlled/Privacy [REDACTED] **Art Boston**, Plant Maintenance Manager (2/14/52 1/31/84); PRVY-Controlled/Privacy [REDACTED]; **Kalim Butt**, Environmental Control Engineer (1/4/1988 Unknown); PRVY-Controlled/Privacy [REDACTED]; **Mark Cordero**, Calibration Tech. - NED (Unknown); PRVY-Controlled/Privacy [REDACTED]; **Dan DeOrio**, Facility Engineer EMD (1/3/1967-8/30/91); PRVY-Controlled/Privacy [REDACTED]; **Robert Dobias**, Facility Engineer EMD (8/10/1981 2/8/91); PRVY-Controlled/Privacy [REDACTED]; **Elisabeth Garthoffner**, Facilities Engineer ESD; PRVY-Controlled/Privacy [REDACTED]; **Ruben Guitierrez**, Hazardous Waste Handler EMD & Y-12; PRVY-Controlled/Privacy [REDACTED]; **Estes Kelley**, Maintenance Supervisor EMD (8/25/1966 7/21/1989); PRVY-Controlled/Privacy [REDACTED] **Benjamin F. Kimball**, Maintenance Supervisor EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **David Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED]; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy [REDACTED]; **Clair Mix**, Health & Safety Engineer NAD (Unknown); **Taylor Myers**, Engineer Specialist NED (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987- 1/11/1991); PRVY-Controlled/Privacy [REDACTED]; **Dennis Pedersen**, Facilities Manager [Northrop Site Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED] **Stephen Raab**, Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy [REDACTED]; **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984 4/20/1990); PRVY-Controlled/Privacy [REDACTED] **Sue Sullivan**, Manager Safety & Environmental Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy [REDACTED]

1 PRVY-Controlled/Privacy Robert Taylor, Facilities Engineer [Specific Anaheim Site Unknown]
2 (7/24/1961 7/31/1990); PRVY-Controlled/Privacy; Loren Thompson, Sr.
3 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy; Jim
4 Tucker, Administrator Maintenance Contracts - ESD (Unknown); Jim Watson, Environmental
5 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy; Bob
6 Wilhite, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy
7 and Ed Wylie, Product Line Manager (Northrop Site and Employment Dates
8 Unknown). After diligent investigation of files pertaining to Northrop's former Y-12 facility
9 located at 301 E. Orangethorpe, Northrop is presently unaware of any additional names of
10 employees who may have performed maintenance on the Y-12 degreaser or may have additional
11 information relevant to this Interrogatory.

12 **SPECIAL INTERROGATORY NO. 314:**

13 IDENTIFY all employees who operated the clarifier at the Y-12 site.

14 **RESPONSE TO SPECIAL INTERROGATORY NO. 314:**

15 NGSC incorporates herein by this reference all general responses and objections set forth
16 above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior
17 interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further
18 objects because the Request calls for the preparation of an employee list which does not presently
19 exist. NGSC further objects to the extent that the Interrogatory violates NGSC's and non-parties'
20 rights to privacy. Subject to and without waiving its objections, NGSC responds as follows:
21 NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman
22 Sealander (Northrop's designated Person Most Knowledgeable for its former "EMD" and "Y-12"
23 sites) may have relevant information related to this Interrogatory. These individuals have already
24 been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by
25 the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on
26 April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed
27 on November 13th, 2007. The deposition transcripts for these individual depositions are equally
28 available to the District for review. Furthermore, NGSC is informed and believes that the

1 following individuals may have knowledge regarding former Northrop employees that may have
2 operated the clarifier at the Y-12 site (contact information provided was obtained from 1992
3 records):

4 **Dave Alexander**, Tool Engineer NED (1992 Unknown); **Matthew Barenfeld**,
5 Environmental Engineer II NED (9/10/90 Unknown), PRVY-Controlled/Privacy
6 [REDACTED]; **John Barth**, Maintenance Worker EMD (11/9/66 -7/31/90), PRVY-Controlled/Privacy
7 [REDACTED] **Diana Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90);
8 PRVY-Controlled/Privacy [REDACTED]; **Art Boston**, Plant Maintenance Manager (2/14/52
9 1/31/84); PRVY-Controlled/Privacy [REDACTED]; **Kalim Butt**, Environmental Control Engineer
10 (1/4/1988 Unknown); PRVY-Controlled/Privacy [REDACTED] **Mark Cordero**,
11 Calibration Tech. - NED (Unknown); PRVY-Controlled/Privacy [REDACTED]; **Dan DeOrio**,
12 Facility Engineer EMD (1/3/1967-8/30/91); PRVY-Controlled/Privacy [REDACTED];
13 **Robert Dobias**, Facility Engineer EMD (8/10/1981 2/8/91); PRVY-Controlled/Privacy [REDACTED]
14 [REDACTED] **Elisabeth Garthoffner**, Facilities Engineer ESD; PRVY-Controlled/Privacy [REDACTED]
15 [REDACTED]; **Ruben Guitierrez**, Hazardous Waste Handler EMD & Y-12; PRVY-Controlled/Privacy [REDACTED]
16 [REDACTED] **Estes Kelley**, Maintenance Supervisor EMD (8/25/1966
17 7/21/1989); PRVY-Controlled/Privacy [REDACTED] **Benjamin F. Kimball**, Maintenance Supervisor
18 EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy [REDACTED] **David**
19 **Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED]
20 [REDACTED]; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy [REDACTED]
21 [REDACTED]; **Clair Mix**, Health & Safety Engineer NAD (Unknown); **Taylor Myers**, Engineer
22 Specialist NED (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987-
23 1/11/1991); PRVY-Controlled/Privacy [REDACTED]; **Dennis Pedersen**, Facilities Manager
24 [Northrop Site Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED];
25 **Stephen Raab**, Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy [REDACTED]
26 [REDACTED]; **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984
27 4/20/1990); PRVY-Controlled/Privacy [REDACTED]; **Sue Sullivan**, Manager Safety &
28 Environmental Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy [REDACTED]

1 PRVY-Controlled/Privacy; **Robert Taylor**, Facilities Engineer [Specific Anaheim Site Unknown]
2 (7/24/1961 7/31/1990); PRVY-Controlled/Privacy; **Loren Thompson, Sr.**
3 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy; **Jim**
4 **Tucker**, Administrator Maintenance Contracts - ESD (Unknown); **Jim Watson**, Environmental
5 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy; **Bob**
6 **Wilhite**, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy
7 and **Ed Wylie**, Product Line Manager (Northrop Site and Employment Dates
8 Unknown). After diligent investigation of files pertaining to Northrop's former Y-12 facility
9 located at 301 E. Orangethorpe, Northrop is presently unaware of any additional names of
10 employees who may have "operated the clarifier at the Y-12 site" or may have additional
11 information relevant to this Interrogatory.

12 **SPECIAL INTERROGATORY NO. 315:**

13 IDENTIFY all employees who repaired the clarifier at the Y-12 site.

14 **RESPONSE TO SPECIAL INTERROGATORY NO. 315:**

15 NGSC incorporates herein by this reference all general responses and objections set forth
16 above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior
17 interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further
18 objects because the Request calls for the preparation of an employee list which does not presently
19 exist. NGSC further objects to the extent that the Interrogatory violates NGSC's and non-parties'
20 rights to privacy. Subject to and without waiving its objections, NGSC responds as follows:
21 NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman
22 Sealander (Northrop's designated Person Most Knowledgeable for its former "EMD" and "Y-12"
23 sites) may have relevant information related to this Interrogatory. These individuals have already
24 been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by
25 the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on
26 April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed
27 on November 13th, 2007. The deposition transcripts for these individual depositions are equally
28 available to the District for review. Furthermore, NGSC is informed and believes that the

following individuals may have knowledge regarding former Northrop employees that may have performed maintenance on the Y-12 clarifier (contact information provided was obtained from 1992 records):

Dave Alexander, Tool Engineer NED (1992 Unknown); **Matthew Barenfeld**, Environmental Engineer II NED (9/10/90 Unknown); [REDACTED]
[REDACTED] **John Barth**, Maintenance Worker EMD (11/9/66 -7/31/90), [REDACTED]
[REDACTED] **Diana Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90); [REDACTED]
[REDACTED] **Art Boston**, Plant Maintenance Manager (2/14/52 1/31/84); [REDACTED]; **Kalim Butt**, Environmental Control Engineer (1/4/1988 Unknown); [REDACTED]; **Mark Cordero**, Calibration Tech. - NED (Unknown); [REDACTED]; **Dan DeOrio**, Facility Engineer EMD (1/3/1967-8/30/91); [REDACTED]; **Robert Dobias**, Facility Engineer EMD (8/10/1981 2/8/91); [REDACTED]; [REDACTED]; **Elisabeth Garthoffner**, Facilities Engineer ESD; [REDACTED]; [REDACTED] **Ruben Guitierrez**, Hazardous Waste Handler EMD & Y-12; [REDACTED]; [REDACTED] **Estes Kelley**, Maintenance Supervisor EMD (8/25/1966 7/21/1989); [REDACTED] **Benjamin F. Kimball**, Maintenance Supervisor EMD (5/24/1967 7/31/1990); [REDACTED]; **David Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); [REDACTED] [REDACTED]; [REDACTED]; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); [REDACTED]; [REDACTED] **Clair Mix**, Health & Safety Engineer NAD (Unknown); **Taylor Myers**, Engineer Specialist NED (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987-1/11/1991); [REDACTED] **Dennis Pedersen**, Facilities Manager [Northrop Site Unknown](1/20/1975 11/21/1990); [REDACTED] [REDACTED]; **Stephen Raab**, Environmental Manager EMD (6/22/1987 9/22/1989); [REDACTED]; [REDACTED] **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984 4/20/1990); [REDACTED]; **Sue Sullivan**, Manager Safety & Environmental Administration EMD (3/26/1985 4/15/1988); [REDACTED]

1 PRVY-Controlled/Privacy; **Robert Taylor**, Facilities Engineer [Specific Anaheim Site Unknown]
2 (7/24/1961 7/31/1990); PRVY-Controlled/Privacy **Loren Thompson, Sr.**
3 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy **Jim**
4 **Tucker**, Administrator Maintenance Contracts - ESD (Unknown); **Jim Watson**, Environmental
5 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy **Bob**
6 **Wilhite**, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy
7 **Wilhite**; and **Ed Wylie**, Product Line Manager (Northrop Site and Employment Dates
8 Unknown). After diligent investigation of files pertaining to Northrop's former Y-12 facility
9 located at 301 E. Orangethorpe, Northrop is presently unaware of any additional names of
10 employees who may have performed maintenance on the Y-12 clarifier or may have additional
11 information relevant to this Interrogatory.

12 **SPECIAL INTERROGATORY NO. 316:**

13 IDENTIFY all employees who performed descaling of the 100 foot long underground
14 piping that connected the wastewater pretreatment system to the public sewer at the Y-12 site.

15 **RESPONSE TO SPECIAL INTERROGATORY NO. 316:**

16 NGSC incorporates herein by this reference all general responses and objections set forth
17 above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior
18 interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further
19 objects because the Request calls for the preparation of an employee list which does not presently
20 exist. NGSC further objects to the extent that the Interrogatory violates NGSC's and non-parties'
21 rights to privacy. NGSC further objects because the phrase "performed descaling" is vague and
22 ambiguous. Subject to and without waiving its objections, NGSC responds as follows: NGSC
23 believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman Sealander
24 (Northrop's designated Person Most Knowledgeable for its former "EMD" and "Y-12" sites) may
25 have relevant information related to this Interrogatory. These individuals have already been made
26 available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by the District.
27 Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on April 22,
28 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed on

1 November 13th, 2007. The deposition transcripts for these individual depositions are equally
2 available to the District for review. Furthermore, according to correspondence submitted by
3 Northrop to the Orange County Sanitation Department (“OCSD”) dated July 2, 1992 (Bates #
4 NGSC 5865), Northrop engaged in an industrial wastewater monitoring program under OCSD
5 Permit # 2-1-512 in which samples of select constituents were taken and analyzed at the “Last
6 Stage of Clarifier” at Northrop’s former Y-12 facility (See Bates # NGSC 5867). Northrop has
7 been unable to locate any references to descaling of the piping that connected the wastewater
8 pretreatment system to the public sewer. After diligent investigation of files pertaining to
9 Northrop’s former Y-12 facility located at 301 E. Orangethorpe, Northrop remains presently
10 unaware of the names of employees who may have possibly “performed descaling” of the piping
11 that connected the wastewater pretreatment system to the public sewer at the Y-12 site.

12 **SPECIAL INTERROGATORY NO. 317:**

13 IDENTIFY all employees who performed sampling of wastewater disposed into the public
14 sewer at the Y-12 site.

15 **RESPONSE TO SPECIAL INTERROGATORY NO. 317:**

16 NGSC incorporates herein by this reference all general responses and objections set forth
17 above. NGSC objects to the Interrogatory to the extent that it is overly broad, compound,
18 burdensome and oppressive in terms of its scope and time-frame. NGSC further objects because
19 the Request calls for the preparation of an employee list which does not presently exist. NGSC
20 further objects to the extent that the Interrogatory violates NGSC’s and non-parties’ rights to
21 privacy. Subject to and without waiving its objections, NGSC responds as follows: According
22 to correspondence submitted by Northrop to the Orange County Sanitation Department (“OCSD”)
23 dated July 2, 1992 (Bates # NGSC 5865), Northrop engaged in an industrial wastewater
24 monitoring program under OCSD Permit # 2-1-512 in which samples of select constituents were
25 taken and analyzed at the “Last Stage of Clarifier” at Northrop’s former Y-12 facility located at
26 301 E. Orangethorpe, Anaheim, California (See Bates # NGSC 5867). The industrial wastewater
27 monitoring program sampled for heavy metals (Silver, Cadmium, Chromium, Copper, Nickel,
28 Lead and Zinc), cyanide, total toxic organics and oil & grease (See Self-Monitoring Report For

1 Total Toxic Organics, Cyanide, and Oil & Grease at Bates # NGSC 3827; See also Semi-Annual
2 Self-Monitoring Report for Cyanide at Bates # NGSC 5866 and Quarterly Self-Monitoring Report
3 for Heavy Metals at Bates # NGSC 5867). It appears that sampling of the Y-12 wastewater was
4 outsourced to **Truesdail Laboratories, Inc.** Furthermore, after diligent investigation of files
5 pertaining to Northrop's former Y-12 facility located at 301 E. Orangethorpe, Northrop is
6 presently unaware of the names of employees who may have possibly performed sampling of
7 wastewater at the former Y-12 site.

8 **SPECIAL INTERROGATORY NO. 318:**

9 IDENTIFY all employees who had responsibility for wastewater from the laboratory at the
10 Y-12 site.

11 **RESPONSE TO SPECIAL INTERROGATORY NO. 318:**

12 See Response to Interrogatory No. 317.

13 **SPECIAL INTERROGATORY NO. 319:**

14 What operations were conducted at the Y-14 building?

15 **RESPONSE TO SPECIAL INTERROGATORY NO. 319:**

16 NGSC incorporates herein by this reference all general responses and objections set forth
17 above. NGSC objects to the Interrogatory to the extent that it is overly broad, compound,
18 burdensome and oppressive in terms of its scope and time-frame. NGSC further objects because
19 the term "Y-14 building" is vague and ambiguous, and not adequately defined with a specific site
20 address. NGSC further objects to the interrogatory because it is not reasonable calculated to lead
21 to the discovery of relevant or admissible evidence. Subject to and without waiving its objections,
22 NGSC responds as follows: NGSC has made a diligent inquiry and investigation of files related to
23 its former sites located at 500 E. Orangethorpe Avenue, Anaheim, California (known as "EMD"),
24 301 E. Orangethorpe Avenue, Anaheim, California ("Y-12"), 1730 North Orangethorpe Park,
25 Anaheim, California (known as "Kester") and 1401 E. Orangethorpe Avenue, Fullerton, California
26 (known as "Y-19") (the Northrop sites at issue in this litigation) and found no references to any
27 former or present Northrop facility designated as "Y-14" at any of the above listed site addresses.

28 ///

SPECIAL INTERROGATORY NO. 320:

IDENTIFY all employees who operated the quench tanks at the EMD site.

RESPONSE TO SPECIAL INTERROGATORY NO. 320:

NGSC incorporates herein by this reference all general responses and objections set forth above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further objects because the Request calls for the preparation of an employee list which does not presently exist. NGSC further objects to the extent that the Interrogatory violates NGSC's and non-parties' rights to privacy. Subject to and without waiving its objections, NGSC responds as follows: NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman Sealander (Northrop's designated Person Most Knowledgeable for its former "EMD" and "Y-12" sites) may have relevant information related to this Interrogatory. These individuals have already been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed on November 13th, 2007 by the District. The deposition transcripts for these individual depositions are equally available to the District for review. Furthermore, NGSC is informed and believes that the following individuals may have knowledge regarding former Northrop employees that may have operated the quench tanks at the EMD site (contact information provided was obtained from 1992 records):

Dave Alexander, Tool Engineer NED (1992 Unknown); **Matthew Barenfeld**, Environmental Engineer II NED (9/10/90 Unknown); **PRVY-Controlled/Privacy**; **5**; **John Barth**, Maintenance Worker EMD (11/9/66 -7/31/90), **PRVY-Controlled/Privacy**; **Diana Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90); **PRVY-Controlled/Privacy**; **Art Boston**, Plant Maintenance Manager (2/14/52 1/31/84); **PRVY-Controlled/Privacy**; **Kalim Butt**, Environmental Control Engineer (1/4/1988 Unknown); **PRVY-Controlled/Privacy**; **Mark Cordero**, Calibration Tech. - NED (Unknown); **PRVY-Controlled/Privacy**; **Dan DeOrio**,

1 Facility Engineer EMD (1/3/1967-8/30/91); PRVY-Controlled/Privacy [REDACTED];
2 **Robert Dobias**, Facility Engineer EMD (8/10/1981 2/8/91) PRVY-Controlled/Privacy [REDACTED]
3 [REDACTED] **Elisabeth Garthoffner**, Facilities Engineer ESD; PRVY-Controlled/Privacy [REDACTED]
4 [REDACTED]; **Ruben Guitierrez**, Hazardous Waste Handler EMD & Y-12; PRVY-Controlled/Privacy [REDACTED]
5 [REDACTED]; **Estes Kelley**, Maintenance Supervisor EMD (8/25/1966
6 7/21/1989); PRVY-Controlled/Privacy [REDACTED]; **Benjamin F. Kimball**, Maintenance Supervisor
7 EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **David**
8 **Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED]
9 PRVY-Controlled; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy [REDACTED]
10 [REDACTED] **Clair Mix**, Health & Safety Engineer NAD (Unknown); **Taylor Myers**, Engineer
11 Specialist NED (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987-
12 1/11/1991); PRVY-Controlled/Privacy [REDACTED] **Dennis Pedersen**, Facilities Manager
13 [Northrop Site Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED]
14 **Stephen Raab**, Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy [REDACTED]
15 [REDACTED] **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984
16 4/20/1990); PRVY-Controlled/Privacy [REDACTED] 1; **Sue Sullivan**, Manager Safety &
17 Environmental Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy [REDACTED]
18 [REDACTED] **Robert Taylor**, Facilities Engineer [Specific Anaheim Site Unknown]
19 (7/24/1961 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **Loren Thompson, Sr.**
20 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy [REDACTED]; **Jim**
21 **Tucker**, Administrator Maintenance Contracts - ESD (Unknown); **Jim Watson**, Environmental
22 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy [REDACTED]; **Bob**
23 **Wilhite**, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy [REDACTED]
24 [REDACTED] and **Ed Wylie**, Product Line Manager (Northrop Site and Employment Dates
25 Unknown). After diligent investigation of files pertaining to Northrop's former ESD facility
26 located at 500 E. Orangethorpe, Anaheim, Northrop is presently unaware of any additional names
27 of employees who may have "operated the quench tanks at the ESD site" or may have additional
28 information relevant to this Interrogatory.

SPECIAL INTERROGATORY NO. 321:

IDENTIFY all employees who repaired the quench tanks at the EMD site.

RESPONSE TO SPECIAL INTERROGATORY NO. 321:

NGSC incorporates herein by this reference all general responses and objections set forth above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further objects because the Request calls for the preparation of an employee list which does not presently exist. NGSC further objects to the extent that the Interrogatory violates NGSC's and non-parties' rights to privacy. Subject to and without waiving its objections, NGSC responds as follows: NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman Sealander (Northrop's designated Person Most Knowledgeable for its former "EMD" and "Y-12" sites) may have relevant information related to this Interrogatory. These individuals have already been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed on November 13th, 2007 by the District. The deposition transcripts for these individual depositions are equally available to the District for review. Furthermore, NGSC is informed and believes that the following individuals may have knowledge regarding former Northrop employees that may have performed maintenance on quench tanks located at the EMD site (contact information provided was obtained from 1992 records):

Dave Alexander, Tool Engineer NED (1992 Unknown); **Matthew Barenfeld**, Environmental Engineer II NED (9/10/90 Unknown); **PRVY-Controlled/Privacy**
John Barth, Maintenance Worker EMD (11/9/66 -7/31/90), **PRVY-Controlled/Privacy**
Diana Beckett, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90); **PRVY-Controlled/Privacy**
Art Boston, Plant Maintenance Manager (2/14/52 1/31/84); **PRVY-Controlled/Privacy**; **Kalim Butt**; Environmental Control Engineer (1/4/1988 Unknown); **PRVY-Controlled/Privacy**; **Mark Cordero**, Calibration Tech. - NED (Unknown); **PRVY-Controlled/Privacy**; **Dan DeOrio**,

1 Facility Engineer EMD (1/3/1967-8/30/91); PRVY-Controlled/Privacy [REDACTED];
 2 **Robert Dobias**, Facility Engineer EMD (8/10/1981 2/8/91); PRVY-Controlled/Privacy [REDACTED]
 3 [REDACTED] **Elisabeth Garthoffner**, Facilities Engineer ESD; PRVY-Controlled/Privacy [REDACTED]
 4 [REDACTED]; **Ruben Guitierrez**, Hazardous Waste Handler EMD & Y-12; PRVY-Controlled/Privacy [REDACTED]
 5 [REDACTED]; **Estes Kelley**, Maintenance Supervisor EMD (8/25/1966
 6 7/21/1989); PRVY-Controlled/Privacy [REDACTED] **Benjamin F. Kimball**, Maintenance Supervisor
 7 EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **David**
 8 **Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED]
 9 [REDACTED]; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy [REDACTED]
 10 [REDACTED]; **Clair Mix**, Health & Safety Engineer NAD (Unknown); **Taylor Myers**, Engineer
 11 Specialist NED (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987-
 12 1/11/1991); PRVY-Controlled/Privacy [REDACTED]; **Dennis Pedersen**, Facilities Manager
 13 [Northrop Site Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED];
 14 **Stephen Raab**, Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy [REDACTED]
 15 [REDACTED] **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984
 16 4/20/1990); PRVY-Controlled/Privacy [REDACTED]; **Sue Sullivan**, Manager Safety &
 17 Environmental Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy [REDACTED]
 18 [REDACTED] **Robert Taylor**, Facilities Engineer [Specific Anaheim Site Unknown]
 19 (7/24/1961 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; **Loren Thompson, Sr.**
 20 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy [REDACTED]; **Jim**
 21 **Tucker**, Administrator Maintenance Contracts - ESD (Unknown); **Jim Watson**, Environmental
 22 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy [REDACTED] **Bob**
 23 **Wilhite**, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy [REDACTED]
 24 [REDACTED]; and **Ed Wylie**, Product Line Manager (Northrop Site and Employment Dates
 25 Unknown). After diligent investigation of files pertaining to Northrop's former ESD facility
 26 located at 500 E. Orangethorpe, Anaheim, Northrop is presently unaware of any additional names
 27 of employees who may have possibly performed maintenance on quench tanks at the ESD site or
 28 may have additional information relevant to this Interrogatory.

SPECIAL INTERROGATORY NO. 322:

IDENTIFY all employees who performed descaling of piping running to the public sewer at the EMD site.

RESPONSE TO SPECIAL INTERROGATORY NO. 322:

NGSC incorporates herein by this reference all general responses and objections set forth above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further objects because the Request calls for the preparation of an employee list which does not presently exist. NGSC further objects to the extent that the Interrogatory violates NGSC's and non-parties' rights to privacy. NGSC further objects because the phrase "performed descaling of piping" is vague and ambiguous and lacks proper identifiers. Subject to and without waiving its objections, NGSC responds as follows: NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman Sealander (Northrop's designated Person Most Knowledgeable for its former "EMD" and "Y-12" sites) may have relevant information related to this Interrogatory. These individuals have already been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed on November 13th, 2007. The deposition transcripts for these individual depositions are equally available to the District for review. Furthermore, NGSC is informed and believes that the following individuals may have knowledge regarding any possible "descaling of piping" that may have occurred at the EMD site (contact information provided was obtained from 1992 records):

Dave Alexander, Tool Engineer NED (1992 Unknown); **Matthew Barenfeld**, Environmental Engineer II NED (9/10/90 Unknown), PRVY-Controlled/Privacy [REDACTED]; **John Barth**, Maintenance Worker EMD (11/9/66 -7/31/90), PRVY-Controlled/Privacy [REDACTED]; **Diana Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90); PRVY-Controlled/Privacy [REDACTED]; **Art Boston**, Plant Maintenance Manager (2/14/52 1/31/84); PRVY-Controlled/Privacy [REDACTED]; **Kalim Butt**; Environmental Control Engineer

1 (1/4/1988 Unknown); PRVY-Controlled/Privacy [REDACTED]; Mark Cordero,
 2 Calibration Tech. - NED (Unknown); PRVY-Controlled/Privacy [REDACTED]; Dan DeOrio,
 3 Facility Engineer EMD (1/3/1967-8/30/91); PRVY-Controlled/Privacy [REDACTED];
 4 Robert Dobias, Facility Engineer EMD (8/10/1981 2/8/91); PRVY-Controlled/Privacy [REDACTED]
 5 [REDACTED] Elisabeth Garthoffner, Facilities Engineer ESD; PRVY-Controlled/Privacy [REDACTED]
 6 [REDACTED] Ruben Guitierrez, Hazardous Waste Handler EMD & Y-12; PRVY-Controlled/Privacy [REDACTED]
 7 [REDACTED] Estes Kelley, Maintenance Supervisor EMD (8/25/1966
 8 7/21/1989); PRVY-Controlled/Privacy [REDACTED] Benjamin F. Kimball, Maintenance Supervisor
 9 EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; David
 10 Lee, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED]
 11 PRVY-Controlled/Privacy [REDACTED]; Ben Lewis, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy [REDACTED]
 12 [REDACTED] Clair Mix, Health & Safety Engineer NAD (Unknown); Tayler Myers, Engineer
 13 Specialist NED (Unknown); Dennis Novotny, Facilities Engineer EMD (10/5/1987-
 14 1/11/1991); PRVY-Controlled/Privacy [REDACTED] Dennis Pedersen, Facilities Manager
 15 [Northrop Site Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy [REDACTED] PRVY-Controlled/Privacy [REDACTED];
 16 Stephen Raab, Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy [REDACTED]
 17 [REDACTED] Bob Riemer, Plant Engineering Manager EMD (2/27/1984
 18 4/20/1990); PRVY-Controlled/Privacy [REDACTED]; Sue Sullivan, Manager Safety &
 19 Environmental Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy [REDACTED]
 20 [REDACTED] Robert Taylor, Facilities Engineer [Specific Anaheim Site Unknown]
 21 (7/24/1961 7/31/1990); PRVY-Controlled/Privacy [REDACTED]; Loren Thompson, Sr.
 22 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy [REDACTED]; Jim
 23 Tucker, Administrator Maintenance Contracts - ESD (Unknown); Jim Watson, Environmental
 24 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy [REDACTED]; Bob
 25 Wilhite, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy [REDACTED]
 26 [REDACTED] and Ed Wylie, Product Line Manager (Northrop Site and Employment Dates
 27 Unknown). After diligent investigation of files pertaining to Northrop's former ESD facility
 28 located at 500 E. Orangethorpe, Anaheim, Northrop is presently unaware of any additional names

1 of employees who may have possibly “performed descaling” of any piping that possibly ran to the
2 public sewer from the former EMD facility or may have additional information relevant to this
3 Interrogatory.

4 **SPECIAL INTERROGATORY NO. 323:**

5 IDENTIFY all employees who worked in the Anodic room at the EMD site.

6 **RESPONSE TO SPECIAL INTERROGATORY NO. 323:**

7 NGSC incorporates herein by this reference all general responses and objections set forth
8 above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior
9 interrogatories, burdensome and oppressive in terms of its scope and time-frame. NGSC further
10 objects because the Request calls for the preparation of an employee list which does not presently
11 exist. NGSC further objects to the extent that the Interrogatory violates NGSC’s and non-parties’
12 rights to privacy. Subject to and without waiving its objections, NGSC responds as follows:
13 NGSC believes that Ken Erwin, Barbara Roach, Alec Uzemeck, David Wong, and Norman
14 Sealander (Northrop’s designated Person Most Knowledgeable for its former “EMD” and “Y-12”
15 sites) may have relevant information related to this Interrogatory. These individuals have already
16 been made available to the District. Mr. Erwin was deposed on February 11th and 12th, 2008 by
17 the District. Barbara Roach was deposed on January 10th, 2008. Alec Uzemeck was deposed on
18 April 22, 2008. David Wong was deposed on April 21, 2008 and Norman Sealander was deposed
19 on November 13th, 2007. The deposition transcripts for these individual depositions are equally
20 available to the District for review. Norman Sealander testified that he only recalled one
21 production worker by name that worked in the Anodic Room. The name of that individual was
22 **James Hawkins** (See Sealander Depo Transcript at 103:4). Furthermore, NGSC is informed and
23 believes that the following individuals may have knowledge relevant to this Interrogatory (contact
24 information provided was obtained from 1992 records):

25 **Dave Alexander**, Tool Engineer NED (1992 Unknown); **Matthew Barenfeld**,
26 Environmental Engineer II NED (9/10/90 Unknown), PRVY-Controlled/Privacy
27 [REDACTED]; **John Barth**, Maintenance Worker EMD (11/9/66 -7/31/90), PRVY-Controlled/Privacy
28 [REDACTED]; **Diana Beckett**, Assoc. Maintenance Contracts EMD (5/2/79 6/22/90);

1 PRVY-Controlled/Privacy; **Art Boston**, Plant Maintenance Manager (2/14/52
2 1/31/84); PRVY-Controlled/Privacy; **Kalim Butt**, Environmental Control Engineer
3 (1/4/1988 Unknown); PRVY-Controlled/Privacy; **Mark Cordero**,
4 Calibration Tech. - NED (Unknown); PRVY-Controlled/Privacy; **Dan DeOrio**,
5 Facility Engineer EMD (1/3/1967-8/30/91); PRVY-Controlled/Privacy;
6 **Robert Dobias**, Facility Engineer EMD (8/10/1981 2/8/91) PRVY-Controlled/Privacy
7 Elisabeth Garthoffner, Facilities Engineer ESD; PRVY-Controlled/Privacy
8 Ruben Guitierrez, Hazardous Waste Handler EMD & Y-12 PRVY-Controlled/Privacy
9 Estes Kelley, Maintenance Supervisor EMD (8/25/1966
10 7/21/1989); PRVY-Controlled/Privacy; **Benjamin F. Kimball**, Maintenance Supervisor
11 EMD (5/24/1967 7/31/1990); PRVY-Controlled/Privacy **David**
12 **Lee**, Facilities Manager ESD (9/20/1985 7/6/1990); PRVY-Controlled/Privacy PRVY-Controlled/Privacy
13 91803; **Ben Lewis**, Machinist EMD (9/16/1974 4/27/1990); PRVY-Controlled/Privacy
14 Clair Mix, Health & Safety Engineer NAD (Unknown); **Taylor Myers**, Engineer
15 Specialist NED (Unknown); **Dennis Novotny**, Facilities Engineer EMD (10/5/1987-
16 1/11/1991); PRVY-Controlled/Privacy **Dennis Pedersen**, Facilities Manager
17 [Northrop Site Unknown](1/20/1975 11/21/1990); PRVY-Controlled/Privacy PRVY-Controlled/Privacy;
18 **Stephen Raab**, Environmental Manager EMD (6/22/1987 9/22/1989); PRVY-Controlled/Privacy
19 ; **Bob Riemer**, Plant Engineering Manager EMD (2/27/1984
20 4/20/1990); PRVY-Controlled/Privacy; **Sue Sullivan**, Manager Safety &
21 Environmental Administration EMD (3/26/1985 4/15/1988); PRVY-Controlled/Privacy
22 Robert Taylor, Facilities Engineer [Specific Anaheim Site Unknown]
23 (7/24/1961 7/31/1990); PRVY-Controlled/Privacy **Loren Thompson, Sr.**
24 Facilities Engineer ESD (Unknown); PRVY-Controlled/Privacy **Jim**
25 **Tucker**, Administrator Maintenance Contracts - ESD (Unknown); **Jim Watson**, Environmental
26 Engineer EMD (4/7/1984 4/3/1987); PRVY-Controlled/Privacy; **Bob**
27 **Wilhite**, Manufacturing Engineer Manager EMD (Unknown); PRVY-Controlled/Privacy
28 ; and **Ed Wylie**, Product Line Manager (Northrop Site and Employment Dates

Unknown). After diligent investigation of files pertaining to Northrop's former ESD facility located at 500 E. Orangethorpe, Anaheim, Northrop is presently unaware of any additional names of employees who may have possibly worked in the Anodic room at the EMD site or may have additional information relevant to this Interrogatory.

SPECIAL INTERROGATORY NO. 324:

What operations were conducted at the Y-19 building?

RESPONSE TO SPECIAL INTERROGATORY NO. 324:

NGSC incorporates herein by this reference all general responses and objections set forth above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior interrogatories, burdensome and oppressive in terms of its scope and time-frame. Subject to and without waiving its objections, NGSC responds as follows: See Response to Special Interrogatory No. 223 served December 14, 2007 in response to the District's Special Interrogatories (Set Six). It is believed that small amounts of 1,1,1-TCA was used at 1401 E. Orangethorpe Avenue, Fullerton, California ("Y-19"). The exact processes in which 1,1,1-TCA was used at this location, which was closed years ago, are not yet fully known to the remaining employees of NGSC. A 1987 Hazardous Materials Disclosure Form on file with the Fullerton Fire Department does state that a small amount of 1,1,1-TCA (1 quart) was used for electrical component assembly. Discovery and investigation is on-going.

SPECIAL INTERROGATORY NO. 325:

When did Kester become a division of NORTHROP?

RESPONSE TO SPECIAL INTERROGATORY NO. 325:

NGSC incorporates herein by this reference all general responses and objections set forth above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior interrogatories, burdensome and oppressive in terms of its scope and time-frame. Subject to and without waiving its objections, NGSC responds as follows: Kester was a division of Litton Systems, Inc. which was a wholly owned subsidiary of Litton Industries, Inc. Litton Industries, Inc. was acquired by Northrop Grumman Corporation in 2001. After the acquisition, Kester was folded into the Component Technologies sector of Northrop Grumman. Northrop's production

activities at the site ceased in August 2002 and the “Kester division,” which had a facility at 1730 N. Orangethorpe Park, Anaheim, California has been sold and has been reported as a discontinued operation.

SPECIAL INTERROGATORY NO. 326:

Describe YOUR BUSINESS RELATIONSHIP with Litton Industries. (“BUSINESS RELATIONSHIP” includes, but is not limited to, the status of the entity as a predecessor or successor-in-interest; the status of the entity as a division, partnership and/or other related entity; and/or a relationship between the entities through an asset purchase agreement, an agreement to assume liabilities of that business, a stock purchase agreement, any merger agreement, any bankruptcy court order approving an acquisition, and/or any name change.

RESPONSE TO SPECIAL INTERROGATORY NO. 326:

See Response to Interrogatory No. 325.

SPECIAL INTERROGATORY NO. 327:

Describe YOUR BUSINESS RELATIONSHIP with Kester Solder.

RESPONSE TO SPECIAL INTERROGATORY NO. 327:

See Response to Interrogatory No. 325.

SPECIAL INTERROGATORY NO. 328:

Identify by bates number all documents YOU produced in this case that include all sampling results reported in the Property Transfer Report.

RESPONSE TO SPECIAL INTERROGATORY NO. 328:

NGSC incorporates herein by this reference all general responses and objections set forth above. NGSC objects to the Interrogatory to the extent that it is duplicative of prior interrogatories, burdensome, harassing and oppressive in terms of its scope and time-frame. NGSC further objects to this Interrogatory because it the term “Property Transfer Report” is vague and ambiguous and lacks proper identifiers. Subject to and without waiving its objections, NGSC responds as follows: In answering this Interrogatory, NGSC assumes this Interrogatory is referring to AWD Technologies 1989 Property Transfer Report for Northrop’s former EMD facility located at 500 E. Orangethorpe, Anaheim, California. This report was produced in three

1 volumes at Bates range NGSC 40892 NGSC 42696. It appears that all sampling results can be
2 found in Appendix G titled "Chain-of-Custody Forms and Laboratory Reports."

3
4 DATED: August 28, 2008

LEWIS BRISBOIS BISGAARD & SMITH LLP

5 By: /s/ R. Gaylord Smith

6 R. GAYLORD SMITH

MALISSA HATHAWAY McKEITH

7 AREZOU KHONSARI

Attorneys for Defendant

8 NORTHROP GRUMMAN SYSTEMS CORPORATION
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PROOF OF SERVICE
Orange County Water District v. Northrop Corporation, et al.. -

STATE OF CALIFORNIA, COUNTY OF SAN DIEGO

I am employed in the County of San Diego, State of California. I am over the age of 18 and not a party to the within action. My business address is 550 West C Street, Suite 800, San Diego, California 92101.

On August 29, 2008, I served the following document described as **NORTHROP GRUMMAN SYSTEMS CORPORATION'S RESPONSES TO PLAINTIFF'S SPECIAL INTERROGATORIES SET SEVEN** on all interested parties in this action:

[X] (BY ELECTRONIC MAIL OR ELECTRONIC TRANSMISSION) Based on a court order and agreement of the parties to accept service by e-mail or electronic transmission, I provided the documents listed above electronically to the Lexis Nexis website and thereon to those parties on the Service List maintained by that website by submitting an electronic version of the documents to Lexis Nexis. If the documents are provided to Lexis Nexis by 5:00 p.m., then the documents will be deemed served on the date that it was provided to Lexis Nexis.

[X] (STATE) I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

[] (FEDERAL) I declare that I am employed in the office of a member of the bar of this Court at whose direction the service was made.

Executed on August 29, 2008, at San Diego, California.

/s/ Sonia Soto
Sonia Soto

1
2
3
4 **VERIFICATION**

5
6 STATE OF CALIFORNIA, COUNTY OF LOS ANGELES
7

8 I have read the foregoing Northrop Grumman Systems Corporation's Responses to
9 Plaintiff's Spécial Interrogatories Set Seven in Orange County Water District v. Northrop
10 Corporation, et al. and know its contents.

11 I am an officer of Northrop Grumman Corporation, a party to this action, and am authorized to
12 make this verification for and on its behalf, and I make this verification for that reason. I am
13 informed and believe and on that ground allege that the matters stated in the foregoing document
14 are true.

15
16 Executed on ~~August~~ ^{September} 3, 2008 at Los Angeles, California. I declare under penalty of perjury
17 under the laws of the State of California that the foregoing is true and correct.
18

19 
20 Kathleen Salmas
21
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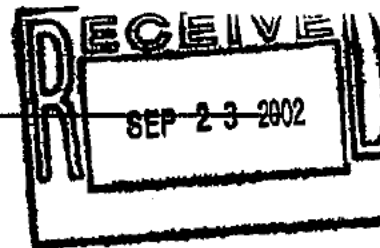
Jan 20 2009
2:22PM

EXHIBIT 40



CITY OF ANAHEIM, CALIFORNIA

Public Utilities Department - Regulatory Compliance



September 17, 2002

Ms. Yvonne Sanchez
Department of Toxic Substances Control
Section Chief - State Regulatory Programs
5796 Corporate Avenue
Cypress, CA 90630

Subject: PCE Release at Northrop Grumman Kester Solder Facility Located at 1730 N. Orangethorpe Parkway in Anaheim, CA

Dear Ms. Sanchez:

This letter is to request your agency's regulatory oversight for a release of tetrachloroethylene (PCE) at the subject location. During the removal of ethanol underground storage tanks, Anaheim Fire Department directed soil sampling and analyses using EPA Method 8260. Two sample were found to contain PCE (84 and 164 ug/kg) so AFD referred the case to Anaheim's Public Utilities Department, the Local Implementing Agency in Anaheim. However, as PCE was not stored in the tanks, we are precluded from conducting the oversight. Therefore, we request that your agency direct site investigation and remediation, if necessary. You may be aware there is extensive PCE and trichloroethylene groundwater contamination in the vicinity of the subject facility.

The contact information for Northrop Grumman is:

Rebecca (Gallay) Hochhauser
Director, Environmental, Health, and Safety
120 Wood Avenue South, Suite 408
Iselin, NJ 08830

phone (732) 452-0349
fax (732) 452-0159
gallare@mail.northgrum.com

If you have any questions, please contact me at 714-765-4277. Since groundwater quality is of such importance to the City of Anaheim, I would appreciate being kept informed of the status of this case.

Sincerely,

Richard Wilson
Environmental Services Manager

c: Rebecca Hochhauser ✓

EXHIBIT 41



California Regional Water Quality Control Board Santa Ana Region



Alan C. Lloyd, Ph.D.
Agency Secretary

3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (951) 782-4130 • FAX (951) 781-6288 • TDD (951) 782-3221
www.waterboards.ca.gov/santaana

Arnold Schwarzenegger
Governor

May 18, 2006

Ms. Joohi Sood, P.E.
Northrop Grumman Corporation
1840 Century Park East, 128/CC
Los Angeles, CA 90067

APPROVAL TO REMEDIATE SOIL USING SOIL VAPOR EXTRACTION AT THE FORMER KESTER SOLDER FACILITY, NORTHROP GRUMMAN CORP., 1730 NORTH ORANGETHORPE PARK, ANAHEIM, CA

Dear Ms. Sood:

We have reviewed the Revised Remedial Action Plan (RAP) to remediate soil using soil vapor extraction (SVE) at the above-referenced facility. The RAP was prepared by your consultants, Orion Environmental, Inc. (Orion), and submitted on March 30, 2006.

Previous investigation has indicated that soil at the above-referenced facility contains chlorinated volatile organic compounds (VOCs), specifically perchloroethylene (PCE), trichloroethylene (TCE), cis-1, 2-dichloroethylene (DCE), alcohols and acetone. The highest concentration of PCE detected in the soil was 11,000 micrograms per kilogram ($\mu\text{g/kg}$), and the highest concentrations of isopropyl alcohol (IPA) and acetone detected in the soil gas were 6,700 milligrams per kilogram (mg/kg) and 980 mg/kg , respectively. Groundwater was found to contain 290 $\mu\text{g/kg}$ of PCE and 2,600 $\mu\text{g/kg}$ of acetone.

The results of the investigation of VOC-impacted soil to the north, south and east of the site were obtained by advancing nine soil borings (OB-1 through OB-9) to depths ranging from 86 feet (ft) to 100 ft below ground surface (bgs). Soil samples were analyzed for VOCs, using U.S. Environmental Protection Agency (U.S. EPA) Method 8260B, and for alcohols, using U.S. EPA Method 8015 (Modified). Soil samples were also tested for total organic carbon and particle size analysis.

The results indicate that subsurface soils consist primarily of silt in the upper 30 ft (shallow zone), sands from 30 ft to 60 ft (intermediate zone) and interbedded silts and clays from 60 ft to 100 ft (deep zone). The deep zone interbedded silts and clays have very low permeability (1.2×10^{-6} centimeters/second). A perched water zone was encountered between 78 ft and 98 ft bgs. Based upon available information for this locality, the regional groundwater aquifer is generally found at approximately 112 ft bgs.

PCE was detected in the shallow, intermediate and deeper zones at maximum concentrations of 730 $\mu\text{g/kg}$, 61 $\mu\text{g/kg}$ and 930 $\mu\text{g/kg}$, respectively. The highest TCE reading of 50 $\mu\text{g/kg}$ was detected in OB-7 at 90 ft.

To establish design parameters for an SVE system, Orion conducted a 2-day SVE pilot test to monitor VOC and alcohol concentrations, and to determine VOC mass removal rates, total flow, vacuum, and radius of influence. The results of the SVE test were that the soil-air permeability ranges from 120 to 280 darcies; the potential maximum flow rate is 500 standard cubic feet per minute (scfm), with a predicted maximum effective radius of influence of 30 ft to 50 ft. Orion estimated that it would take approximately 1.9 years to remove 1,000 pore volumes from a 35-foot radius at 20 and 35 scfm in the shallow and

California Environmental Protection Agency



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OCWD VOC 0063841

intermediate wells, respectively. Orion also indicated that SVE would not be effective in the 70 to 90 ft interval, because of the low permeability silts and clays that are present in the deep zone.

During the pilot test, Orion collected soil gas samples, which were analyzed for VOCs using U.S. EPA Method 8260 in a State-certified onsite mobile lab. Analytical results indicated that the average PCE and IPA concentrations were 4,100 and 3,200 µg/l, respectively. The highest concentrations of PCE, TCE, cis-1, 2 DCE and vinyl chloride detected in the extraction wells were 16,000 µg/l, 120 µg/l, 340 µg/l and 53 µg/l, respectively. The maximum detected concentration of IPA was 6,900 µg/l.

Orion has proposed an overlapping layout and construction of SVE wells based on the lithology, soil and soil vapor concentrations and a radius of influence of 35 feet. In addition to VEW-1 and VEW-2, which were installed for the pilot test, Orion proposes to install ten additional SVE wells to depths of 70 feet bgs. This configuration will consist of one or two 2-inch diameter wells, with depth-specific screened casings. These casings are proposed as follows: Wells VEW-1, VEW-2, VEW-5, VEW-6, VEW-7, VEW-8, VEW-9, VEW-10 will have two 2-inch diameter casings, one in the shallow 5 to 25 foot zone and the other in the intermediate 35 to 70 foot zone. VEW-3, VEW-4, VEW-11, VEW-12, will have one 2-inch diameter casing, screened in either of the two zones, depending upon field conditions and lithology encountered.

Orion proposes to use 2-inch diameter flush-threaded Schedule polyvinyl chloride (PVC) casings, with a slot size of 0.020 inch, and a sand filter pack of #2 ½ Monterey sand, but final selection will be made based upon field observations. The filter pack will extend from total depth to about 1-foot above the top of the screen. The filter pack will be overlain by approximately 3 to 4 feet of bentonite, with a subgrade vault and locking well cap. A traffic-rated cover will be bolted over the vault.

Four nested vapor-monitoring wells (VM-19 through VM-23) were installed for the pilot test. Each nested well was constructed using ¼-inch diameter nylon tubing, with 6-inch long stainless steel sampling points. Wells VM-19, VM-21 and VM-22 were dual-nested, with sampling points placed at 10 and 100 feet bgs. Well VM-20 was triple-nested, with sampling points at 10, 50 and 100 feet bgs.

Orion proposes to install two additional vapor monitoring wells (VM-23 and VM-24). These will be constructed using 1-inch diameter flush-threaded polyvinyl chloride (PVC) casings, with a slot size of 0.020 inch and a sand filter pack of #2 ½ Monterey sand. Each vapor monitoring well will have a shallow screen at approximately 8 to 13 feet bgs, and an intermediate depth screen at approximately 50 to 60 feet bgs.

To evaluate the vertical and lateral extent of VOC-impacted soil and assist in defining SVE operational parameters, Orion proposes to collect soil samples for analyses during installation of the vapor extraction and vapor monitoring wells. Soil samples will be collected in VEW-3, VEW-4, VEW-6, VEW-9, VEW-10, at depths of 5 feet, 10 feet, 20 feet and 30 feet bgs, and will be analyzed for VOCs and alcohols, except soil samples in VEW-6 and VEW-10, which will not be analyzed for alcohols. Other soil samples may be collected, depending upon visual observations and field instrument readings.

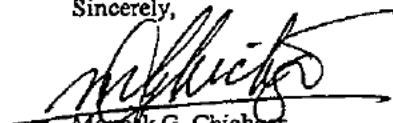
Orion proposes to conduct a soil gas survey at each vapor monitoring and vapor extraction well before start up of the SVE system, and then conduct static soil gas surveys every 3 to 6 months. Soil gas samples will be analyzed for VOCs in an on-site, mobile, State-certified laboratory and also in a fixed, off-site, State-certified laboratory. VOCs will be analyzed using U.S. EPA Method 8260B, and alcohols will be analyzed using U.S. EPA Method 8015.

May 18, 2006

Orion has proposed to continue SVE operations until average concentrations of COCs in the upper 25 feet of soil decrease below U.S. EPA Region 9 preliminary remediation goals (PRGs) for soil matrix concentrations, and in the intermediate zone until the data plot of COC concentrations in the soil gas samples versus time is an asymptotic curve. Orion proposes to perform rebound tests to determine the appropriate time for a request for final closure. Board staff recommends that the asymptotic curve should be reached in both the shallow and intermediate zones prior to rebound testing.

We concur with the workplan proposed by Orion, and request that you provide at least ten days notice prior to initiation of any fieldwork associated with this project. If you have any questions, please call me at (951) 782-3252, or you may call Ann Sturdivant, Chief of our SLIC/DoD Section at (951) 782-4904.

Sincerely,



Maneck G. Chichgar
Engineering Geologist

cc: Jeff Gwinn, Orion Environmental, Inc.

C:\Data\Maneck\Northrop-Kester\Appe RAP SVE

California Environmental Protection Agency



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OCWD VOC 0063843

EXHIBIT 42



California Regional Water Quality Control Board Santa Ana Region



Linda S. Adams
Secretary for
Environmental Protection

3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (951) 782-4130 • FAX (951) 781-6288 • TDD (951) 782-3221
www.waterboards.ca.gov/santaana

Arnold Schwarzenegger
Governor

April 12, 2007

Mr. Chris Stacklin
Orange County Sanitation District
10844 Ellis Avenue
Fountain valley, CA 92708-7018

REQUEST FOR SPECIAL PURPOSE DISCHARGE PERMIT, SOIL VAPOR EXTRACTION SYSTEM AT THE FORMER KESTER SOLDER FACILITY, NORTHROP GRUMMAN CORP., 1730 NORTH ORANGETHORPE PARK, ANAHEIM, CA

Dear Mr. Stacklin:

This is in response to your March 14, 2007 e-mail to Orion Environmental, Inc. (Orion), wherein you requested us to provide written clarification regarding the best option for disposal of wastes associated with the soil vapor extraction (SVE) system.

As indicated in Orion's March 8, 2007 letter to you, Orion is installing a scrubber for the thermal oxidizer associated with the SVE system. Orion indicates that the concentration of total dissolved solids (TDS) in the discharge from the scrubber would range from 15,000 to 20,000 parts per million. This TDS level would significantly exceed the Basin Plan objectives of nearby ground and surface waterbodies, and such a discharge cannot be allowed into a storm drain or the ground surface. The cost of further treatment to reduce the TDS levels or for transport and disposal of the discharge are not justifiable. Under the circumstances, we agree that a discharge into the sewer may be the best option. We request that the facility be given permission to discharge the water from the SVE system to the sanitary sewer system.

If you have any questions, please call me at (951) 782-3252, or you may call Ann Sturdivant, Chief of our SLIC/DoD Section at (951) 782-4904.

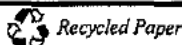
Sincerely,

Maneck G. Chichgar
Engineering Geologist

cc: Jeff Gwinn, Orion Environmental, Inc.

C: Data/Maneck/Northrop Kester/OCSD Ltr

California Environmental Protection Agency



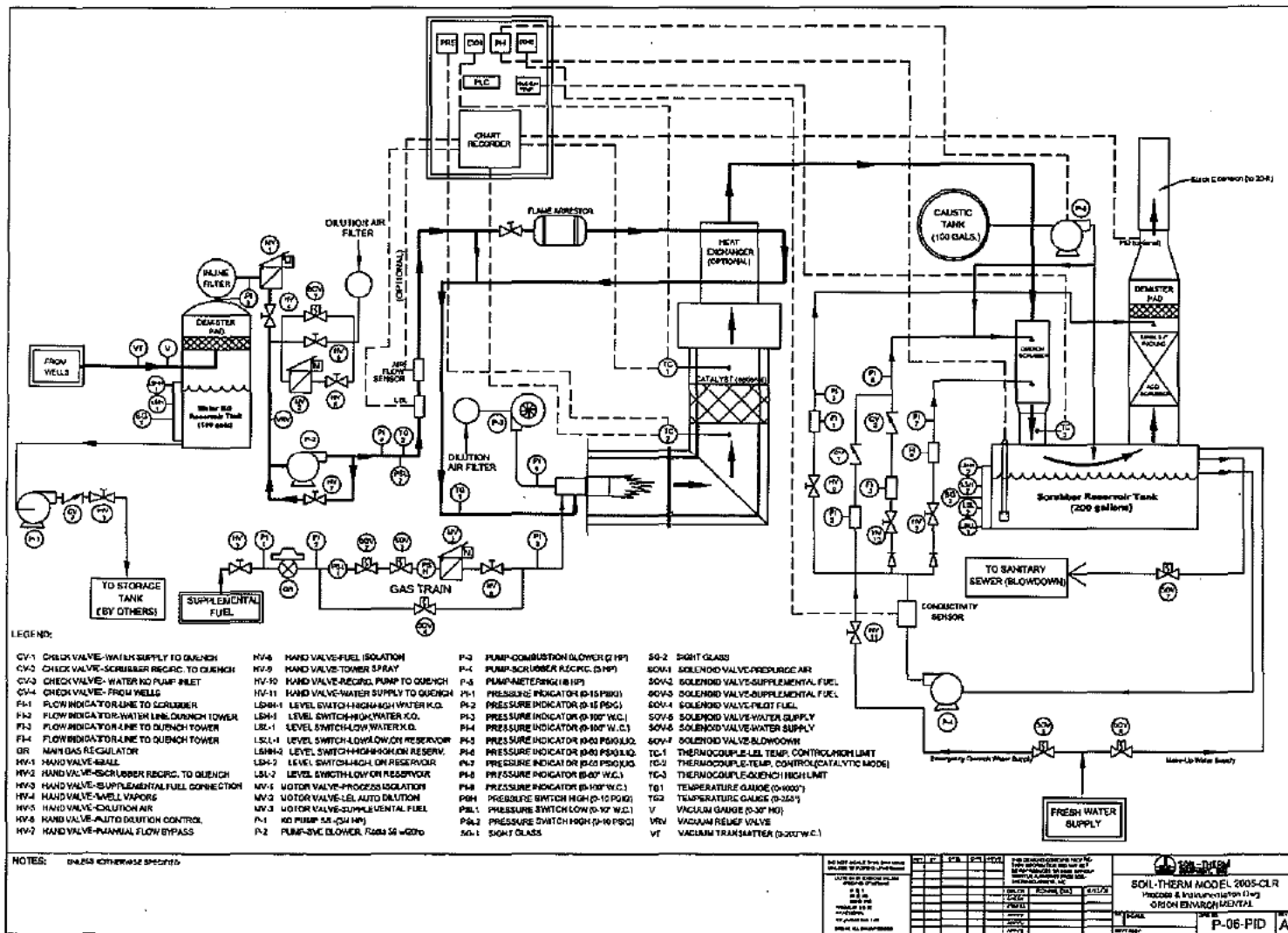


EXHIBIT 43

Bi-Weekly Status Report

Kester-Anaheim Project



To: Kester-Anaheim Project Team
Reporting Period: 25 January to 8 February 2008

From: Miguel Tseng
Date: 8 February 2008

The following is a summary of tasks performed for the period from 25 January to 8 February 2008:

Groundwater Investigation Activities

- ☐ Orion submitted a scope of work and budget proposal to Steve Mulligan for quarterly groundwater monitoring activities on site.
- ☐ Quarterly groundwater monitoring for 1st Quarter 2008 has been scheduled for 29 January 2008.

Soil Remediation Activities

Operating SVE Well Field from 1/15/2007 through Present

Parameter	VEW-2-S	VEW-2-D	VEW-13	VEW-11	VEW-10-S	VEW-10-D	VEW-7-S	VEW-7-D	VEW-8-S
Open/Closed	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	CLOSED	CLOSED
Flow (scfm) ^(a)	18	--	--	--	--	--	94	--	--
PID (ppmv) ^(a)	1,372	--	--	--	--	--	42	--	--
Parameter	VEW-8-D	VEW-9-S	VEW-9-D	VEW-1-D	VEW-1-S	VEW-6-D	VEW-6-S	VEW-5-S	VEW-5-D
Open/Closed	CLOSED	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN	CLOSED	CLOSED
Flow (scfm) ^(a)	--	19	--	--	63	--	21	--	--
PID (ppmv) ^(a)	--	218	--	--	1,518	--	211	--	--
Parameter	VEW-4	VEW-12	VEW-3						
Open/Closed	CLOSED	CLOSED	OPEN						
Flow (scfm) ^(a)	--	--	70						
PID (ppmv) ^(a)	--	--	53						

(a) Well PID and flow data collected from dynamic soil gas survey conducted on 15 January 2008.

Monthly Summary of SVE System Results/Data

Month	PCE (µg/l)	TCE (µg/l)	Total VOCs ^(b) (µg/l)	Flow (scfm)	Vacuum (in-Hg)	System Uptime (%)	Mass Removal Rate (lbs/day)	Mass Removed (lbs)
October	1,250	23	1,322	336	3.5	28 ^(a)	35	87
November	785	18	836	345	1.25	47	23	327
December	190	11	270	339	1.7	64	7	142
								556

(a) System operation began 22 October 2007; system uptime for month based on the remaining 9-day period.

(b) Average monthly VOC concentrations.

- ☐ During this two-week period, the SVE system operated nine consecutive days from 10 January to 19 January 2008. The system has been offline since 19 January 2008 due to



snapping of the driver belts within the blower caused by an internal misalignment of parts. Soil-Therm has been scheduled to repair and realign the blower under warranty on Monday, 28 January 2008

- ❑ Orion continued SVE system O&M, optimization, and trouble-shooting including: (1) mass removal optimization by shutdown of six SVE well casings, (2) performance of a dynamic soil gas survey on 15 January 2008, and (3) changing of blower oil as required per manufacturer specifications.
- ❑ System uptime for the two-week period was only 57 percent (approximately 8 days of operation) due to the system shut-down caused by the blower malfunction.
- ❑ On 10 January 2008, Orion conducted system optimization by closing down deeper vapor extraction casings screened across the sand zone. A total of nine casings (VEW-1D, -2D, -5D, -6D, -7D, -8D, -9D, -10D, and -12D) were shut-down to increase extraction from vapor extraction casings in the shallow silty zone.
- ❑ On 15 January 2008, Orion conducted additional system optimization by closing six vapor extraction wells (VEW-5-S, VEW-11, VEW-13, VEW-10-S, VEW-8-S, and VEW-4) with the lowest mass removal rates (less than 0.20 pounds/day) screened across the shallow silty zone. Currently, the operating SVE well field consists of six wells shown in the summary table above.
- ❑ Total system flow during the two-week operation was approximately 285 scfm with a total applied vacuum of 10.5 inches of mercury. To date, the SVE system has operated for a total of 1,203 hours.
- ❑ Orion submitted the OCSD monthly discharge flow report on 20 January 2008.

EXHIBIT 44

**Orion Environmental Inc.**

3450 E. Spring St., Suite 212 562 988-2755 PHONE
Long Beach, CA 90806 562 988-2759 FAX

68A Arctic Environmental

1331 Pershing Avenue 510 525-2150 PHONE
Berkeley, CA 94763 510 525-2350 FAX

INVOICE

Invoice Date: 23 January 2008
Invoice Period: 12/12/07 through 1/19/08
Northrop Project Manager: Steve Mulligan
Project Location: Anaheim, CA
Payment Terms: Net 30

Invoice Number: 02ANM-82
P.O. No.: 2616645 CO #3
Project Name: Keeler Anaheim
Federal ID #: 33-0627555
Charge No.: J1143

WBS Element	SOW Amount	Invoice Amount	Invoiced To Date	SOW Balance
J1143 AZ	4,605.00	-	4,584.55	20.45
J1143 BZ	76,086.00	-	74,556.21	1,529.79
J1143 CZ				
J1143 DZ				
J1143 EZ	29,025.00	1,146.00	27,804.03	2,020.97
J1143 FZ	389,440.50	-	390,913.76	(1,473.26)
J1143 GZ	35,204.00	-	21,085.50	14,118.50
J1143 HZ	101,315.00	6,722.72	28,711.77	72,603.23
J1143 IZ	7,435.00	2,502.50	2,502.50	4,932.50
J1143 JZ				
J1143 KZ	26,260.00	1,142.50	25,814.49	445.51
Total	\$ 670,170.50	\$ 11,523.72	\$ 575,972.84	\$ 94,197.66

	WORK PERFORMED THIS INVOICE PERIOD
J1143 AZ	
J1143 BZ	
J1143 CZ	
J1143 DZ	
J1143 EZ	As-built drawings for SVE system
J1143 FZ	
J1143 GZ	
J1143 HZ	SVE CM&M, chemicals, and parts
J1143 IZ	SVE installation and start-up report
J1143 JZ	
J1143 KZ	PM - budget management, conference calls, bi-weekly status reporting

	INCURRED COSTS AGAINST P.O.			
P.O. Expiration Date	P.O. Amount	Invoice Amount	Invoiced to Date	P.O. Balance
8/31/2008	\$ 671,208.00	\$ 11,523.72	\$ 575,972.84	\$ 95,235.16

Bill to:
Northrop Grumman Systems Corporation
Attention: Accounts Payable
8710 Freeport Parkway, Suite 200
Irving, TX 75063-2577

Please remit payment to:
Orion Environmental Inc.
3450 E. Spring Street, Suite 212
Long Beach, California 90806
562/988-2755

EXHIBIT 45



Orion Environmental Inc.

✓ 3450 E. Spring St., Suite 212 562-988-2755 PHONE
Long Beach, CA 90806 562-988-2750 FAX

DBA Arcas Environmental

1312 Peralta Avenue 510-525-2180 PHONE
Berkeley, CA 94702 510-525-2392 FAX

10 October 2008
Project No. 02ANH

Joseph Kwan
Corporate Director, Environmental Remediation
Northrop Grumman Corporation
1840 Century Park East, 128CC
Los Angeles, California 90067

**Subject: 3rd Quarter 2008 Groundwater Monitoring and
Remediation Status Report
1730 N. Orangethorpe Park, Anaheim, California
LUSTIS Case No. 083002146T**

Dear Mr. Kwan:

Orion Environmental Inc. (Orion) has prepared this letter report summarizing activities performed for the 3rd quarter 2008 at the subject site (Figure 1). Site activities are conducted on behalf of Northrop Grumman Guidance and Electronics Company, Inc. (Northrop Grumman; formerly Litton Systems Inc.). Orion, as Northrop Grumman's Authorized Responsible Party for the site, submitted the groundwater monitoring data to the State Water Resources Control Board in electronic format. The data were submitted under the State-mandated Electronic Submittal of Information requirements for groundwater cleanup programs.

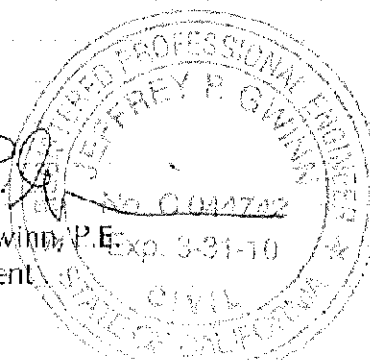
If you have questions or comments regarding this letter, please call Miguel Tseng or Jeff Gwinn at 562/988-2755.

Very truly yours,

ORION ENVIRONMENTAL INC.

Miguel Tseng
Project Engineer

Jeffrey P. Gwinn, P.E.
Vice President



Copy: Steve Mulligan – IDEA, Inc.

3rd Quarter 2008 Groundwater Monitoring and
Remediation Status Report
1730 N. Orangethorpe Park, Anaheim, California
10 October 2008



Facility Name: Kester-Anaheim Facility
Address: 1730 N. Orangethorpe Park,
Anaheim, California (Figure 1)
Northrop Grumman Project Manager: Steve Mulligan
Consultant/Contact Person: Orion Environmental Inc. / Jeff Gwinn
Primary Agency: Regional Water Quality Control Board (RWQCB)
Santa Ana Region

Work Performed this Monitoring Period: **(July - September 2008)**

1. Performed operation, maintenance, and monitoring (OM&M) activities for an onsite soil vapor extraction (SVE) system including 30-day rebound assessment static soil gas survey.
2. Conducted weekly monitoring and monthly sampling required by the South Coast Air Quality Management District (SCAQMD) under permit no. F89927.
3. Submitted monthly effluent flow meter calibration forms and quarterly total toxic organics self-monitoring reports to the Orange County Sanitation District (OCSD) as required by Special Purpose Discharge Permit No. 52-276.
4. Conducted quarterly groundwater monitoring of eight wells on 12 August 2008 and submitted 2nd quarter 2008 report.
5. Submitted a 28 July 2008 Remedial Action Plan (RAP) Amendment for soil gas surveys incorporating updated RWQCB protocols for vapor extraction system rebound testing.
6. Prepared and submitted a well installation and pilot test work plan for additional groundwater wells and hydraulic assessment of the perched zone.

Work Proposed for Next Monitoring Period: **(October - December 2008)**

1. Prepare and submit the quarterly groundwater monitoring and remediation status report for 3rd quarter 2008.
2. Conduct quarterly groundwater monitoring for 4th quarter 2008.
3. Continue SVE system OM&M including weekly, monthly, and quarterly compliance monitoring and sampling activities as specified in the SCAQMD and OCSD permits.
4. Perform additional static soil gas surveys, as needed, to assess, optimize, and document the progress of soil remediation activities.
5. Install, develop, and sample three additional perched zone monitoring wells (MW-5 through MW-7) pending work plan approval from RWQCB.
6. Conduct a hydraulic assessment pilot test to evaluate potential remediation technologies for perched zone groundwater impacted by volatile organic compounds (VOCs).



Site Summary for Groundwater:

Current Phase of Project:

Monitoring and Assessment

Frequency of Groundwater Monitoring:

Quarterly

Well ID	Sampling Method	Sampling Frequency
MW 1-95, MW 2-95, MW 3-95, MW 4-95 (Perched Zone)	Traditional Purging and Sampling	Quarterly
MW-1-125, MW-2-125, MW-3-125, MW-4-125 (Saturated Zone)		

Is Free Product (FP) Present On Site:

No

Approximate Depth to Groundwater:

86.84 to 88.08 feet in perched zone and
108.79 to 109.82 feet in saturated zone (Table 1)

Groundwater Gradient (direction):

West to west-northwest

Groundwater Gradient (magnitude):

0.0107 ft/ft (56.5 feet per mile) in perched zone
0.0018 ft/ft (9.5 feet per mile) in saturated zone

Groundwater Elevations

Water levels were measured in eight groundwater monitoring wells screened in the perched and upper saturated zones (Figure 2). Compared to the 2nd quarter 2008 monitoring event, there was approximately a 0.88-foot decrease and 2.11-foot decrease in groundwater elevations for the perched and saturated zone wells, respectively (Table 1). The decrease in the upper saturated zone wells is consistent with decreasing trends in groundwater elevations recently observed regionally within the Upper Aquifer System.

Groundwater elevations for wells completed in the perched zone ranged from 78.39 to 80.57 feet above mean sea level (MSL). Monitoring well MW-3-95 (screened through the perched zone) was dry. Based on groundwater elevations from wells MW-1, MW-2, and MW-4, the groundwater gradient in the perched zone flows west-northwest at approximately 0.0107 foot per foot (1 foot per 94 feet). Figure 3 shows the water level elevations and isocontour lines for the perched zone.

Groundwater elevations for wells completed in the upper saturated zone ranged from 57.55 to 57.90 feet above MSL. The difference in water elevations between the perched zone and the upper saturated zone was about 21 to 23 feet, indicating minimal hydraulic connection between the two zones on site.

Based on groundwater elevations, the gradient for the upper saturated zone is approximately 0.0018 foot per foot (1 foot per 556 feet) toward the west. Groundwater elevations are



presented in Table 1. Figure 4 shows the water level elevations and isocontour lines for the upper saturated zone.

Groundwater Analytical Results

Groundwater samples were analyzed for VOCs using EPA Method 8260B by Microbac Laboratories, Inc. (Microbac), of Signal Hill, California. Table 2 summarizes the analytical results and Figures 3 and 4 show the tetrachloroethene (PCE) and trichloroethene (TCE) results for the perched and upper saturated zones, respectively. Field sampling logs are in Attachment A. Groundwater analytical laboratory reports and chain-of-custody forms are in Attachment B.

Chlorinated VOC concentrations detected in the groundwater samples collected from the perched zone decreased relative to samples from the previous quarter. The most significant decrease was observed in groundwater PCE concentrations which decreased by a minimum of 15 percent in the perched zone. The greatest decrease in PCE was observed in well MW-4-95, which decreased over 50 percent from 1,800 to 880 micrograms per liter ($\mu\text{g/l}$) relative to the previous quarter. Groundwater concentrations in upper saturated zone wells remained stable relative to the previous quarter. The chlorinated VOCs detected included PCE, TCE, cis-1,2-dichloroethene (cis-1,2-DCE), and 1,1-dichloroethene (1,1-DCE).

As expected, the highest perched zone VOC concentrations were generally detected at source area well MW-4. Perched zone well MW-4-95 contained the highest PCE, TCE, cis-1,2-DCE, and 1,1-DCE concentrations of 2,000, 120, 140, and 24 $\mu\text{g/l}$, respectively. Monitoring well MW-1-125 contained the highest saturated zone concentrations for PCE and TCE at 38 and 27 $\mu\text{g/l}$, respectively.

PCE concentrations in the perched zone ranged from 880 to 2,000 $\mu\text{g/l}$, while concentrations in the upper saturated zone ranged from 12 to 38 $\mu\text{g/l}$. TCE concentrations in samples from the perched zone ranged from 67 to 120 $\mu\text{g/l}$, while concentrations in the upper saturated zone ranged from 9.7 to 27 $\mu\text{g/l}$. The VOCs concentrations in the upper saturated zone were similar to those in nearby regional wells screened in the upper aquifer system.

Site Summary for Soil:

Current Phase of Project:
Current Remediation Technology:
Average Extraction Flow Rate:
Total Mass Removed To Date:
Percent Uptime for Quarter:
SVE System Layout:

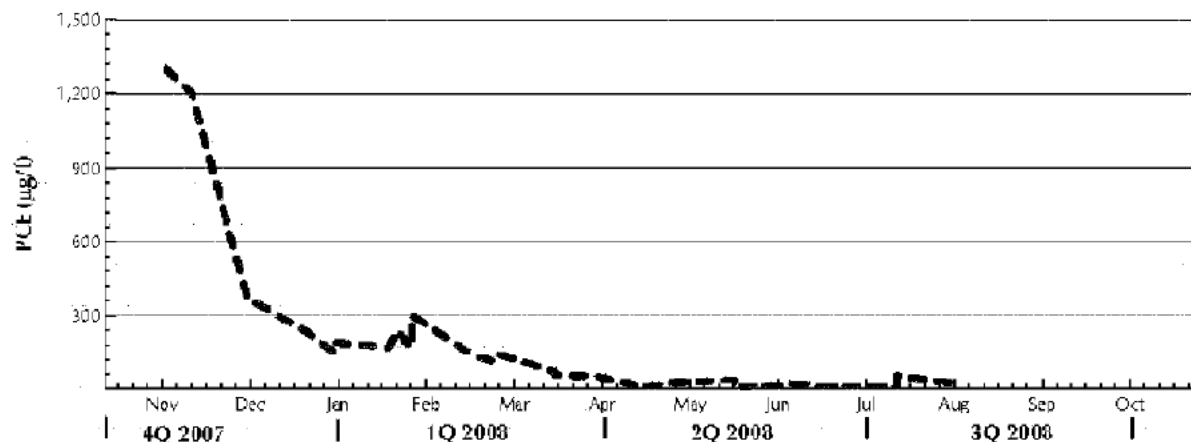
Remediation

Chlorinated thermal oxidizer with scrubber (SVE)
370 standard cubic feet per minute
919 pounds of VOCs
52 percent (excluding rebound soil survey)
13 extraction wells (Figure 2)



SVE System Operation

The SVE system operated during the 3rd quarter of 2008. The SVE system Influent was monitored weekly with a field photoionization detector (PID) and monthly by laboratory analysis to document and optimize VOC mass removal. SVE system influent gas analytical results are in Table 3. The influent PCE concentration over time is shown below:



During the 3rd quarter of 2008, Orion changed the operating active well configuration three times to maximize VOC mass removal rates and optimize system efficiency. The SVE system was off line for 61 days due to a 1-month rebound static soil gas survey and procurement and system repairs. System downtime due to equipment repairs during the quarter totaled 26 days and was mainly the result of wait times on backordered parts from equipment vendors. The major equipment repairs for the quarter included the replacement of (1) corroded caustic solution spray nozzles, (2) a gas regulator damaged during the 29 July 2008 earthquake in Chino Hills, and (3) a broken flow sensor. The following table summarizes the operating period, active wells, and system uptime through 30 September 2008.

Period	Active Vapor Extraction Wells (VEW)	Possible Operating Days	Actual Operating Days	Percent Uptime
07/01/08 to 07/21/08	1-D, 5-D, 6-D, 9-D, and 12-D	21	18	86
07/22/08 to 07/29/08	7-D, 8-D, 9-D, and 10-D	8	8	100
07/30/08 to 09/05/08	System offline for 1-month static soil gas survey	---	---	---

3rd Quarter 2008 Groundwater Monitoring and
Remediation Status Report
1730 N. Orangethorpe Park, Anaheim, California
10 October 2008



Period	Active Vapor Extraction Wells (VEW)	Possible Operating Days	Actual Operating Days	Percent Uptime
09/06/08 to 09/30/08	System offline for repairs including spray nozzle, gas regulator, and flow sensor	25	2	8
*TOTALS:		54	28	52

*Percent uptime does not include time off line due to soil gas survey.

The VOC mass removal rate was calculated from influent soil gas sample results and field flow measurements. Historical monthly system operating parameters including flow, vacuum, and mass removal rates are summarized in the table below:

Monthly SVE Data	PCE (µg/l)	TCE (µg/l)	Total VOCs ^(a) (µg/l)	Flow (scfm)	Vacuum (in. Hg)	System Uptime (%)	Mass Removal Rate (lbs/day)	Mass Removed by Volatilization (lbs)
2007 ^(b)	--	--	--	--	--	--	--	536
January 2008	220	6	230	360	6.15	52	7.0	113
February	143	3	147	351	6	74	4.5	96
March	39	26	66	364	4.6	100	2.0	70
April	27	-- ^(c)	27	396	3	77	1.0	24
May	19	4	24	365	6	64 ^(d)	0.7	14
June	11	0.19	12	332	8	100	0.3	10
July	25	3	29	377	4	91 ^(e)	1.3	36
August	--	--	--	--	--	0 ^(f)	--	--
September	--	--	--	374 ^(g)	3	7	0.6	1.2
								920

^(a) Average monthly VOC concentrations as analyzed using EPA Method 8260B and recorded in µg/l.

^(b) System operation began 22 October 2007.

^(c) No TCE was detected by laboratory in April vapor samples.

^(d) System was offline for approximately 11 days for static soil gas survey conducted on 19 and 20 May 2008.

^(e) System shutdown from gas pressure switch alarm occurred 29 July 2008.

^(f) System offline August 2008 in preparation for a 30-day rebound soil gas survey; monthly vapor samples and weekly readings not collected.

^(g) System offline for majority of September 2008 due to equipment malfunctions and repairs. System parameters based on data collected 19 September 2008.

A total of 37 pounds of VOCs was removed during the 3rd quarter 2008. Since system start-up in October 2007, the SVE system has removed 920 pounds of VOCs from the subsurface.

Soil Gas Surveys

To evaluate the progress of soil remediation and optimize well field performance, Orion conducted one dynamic soil gas survey and one static soil gas survey during the



3rd quarter 2008. The frequency of soil gas surveys decreased relative to previous quarters due to decreasing VOC concentrations.

The dynamic soil gas survey was conducted on 1 July 2008. During the dynamic survey, total VOCs were measured using a field PID and the extraction well flow rates were measured using a hot-wire anemometer at individual extraction wells. The extraction rates and VOC concentrations were used to estimate a mass removal rate for each extraction well and optimize the well field performance.

Orion also performed a 1-month rebound static soil gas survey of 21 vapor extraction well casings and 28 vapor monitoring wells from 3 through 5 September 2008. The SVE system was shut down on 29 July 2008 and subsurface conditions were allowed to equilibrate for a period of 34 days. The purpose of the soil gas survey was to evaluate if predominantly asymptotic concentrations observed after a 48-hour soil gas survey conducted in May 2008 would rebound due to residual VOC mass in the subsurface. The degree to which soil vapor concentrations rebound after a prolonged equilibrium period is typically used to gauge the progress of soil remediation.

The survey was conducted using a State-certified mobile laboratory operated by Microbac and followed the field procedures described in Orion's March 2006 soil RAP. Soil gas samples were collected from the monitoring wells using sampling procedures approved by the California Department of Toxic Substances Control.

Laboratory analytical results indicated that, even after a 1-month rebound period, PCE concentrations decreased or remained the same in 23 out of 33 vapor wells relative to the May 2008 sampling event. Total VOC concentrations for each vapor well have decreased to less than 1,000 $\mu\text{g/l}$ since SVE system start-up. Only three vapor wells, VM-19-10 (580 $\mu\text{g/l}$), VM-19-50 (890 $\mu\text{g/l}$), and VEW-13-20 (120 $\mu\text{g/l}$), have PCE concentrations above 100 $\mu\text{g/l}$.

The 1-month rebound results indicate soil gas concentrations beneath the site are nearing asymptotic conditions. For example, PCE concentrations in shallow vapor monitoring point VM-21-10 have decreased from 51,000 $\mu\text{g/l}$ (the highest concentration on site) in July 2006 to 1,100 $\mu\text{g/l}$ in May 2008 to 10 $\mu\text{g/l}$ in September 2008. In addition, total VOC concentrations in over 80 percent (40 out of 49) of the wells are below 50 $\mu\text{g/l}$. The static soil gas survey results were consistent with decreasing VOC concentrations observed in monthly SVE influent system samples. Analytical results for the soil gas samples are summarized in Table 4, and the soil gas laboratory reports and chain-of-custody forms are in Attachment C.



SCAQMD and OCSD Monitoring

In accordance with SCAQMD permit no. F89927, Orion conducted weekly influent and effluent vapor monitoring of the SVE system using a PID. In addition, monthly influent and effluent gas samples were collected and submitted to Microbac for VOC analysis by EPA Method 8260B. PCE, TCE, and vinyl chloride concentrations in effluent gas samples were below the discharge limits specified by the SCAQMD permit.

Orion also submitted monthly wastewater effluent flow calibration reports and conducted quarterly sampling and analysis for total toxic organics (TTO) as specified in OCSD Special Purpose Discharge Permit No. 52-276. Effluent discharge samples were collected on 28 July 2008 and submitted to Calscience Environmental Laboratories, Inc., of Garden Grove, California, for analysis by EPA Method 624. The results were in compliance with permit conditions.

Attachments:

- Table 1 – Historical Well and Groundwater Elevations
- Table 2 – Historical Groundwater Analytical Results
- Table 3 – SVE Influent Sampling Results
- Table 4 – Historical Soil Gas Analytical Results
- Figure 1 – Site Location Map
- Figure 2 – Site Plan with Monitoring Well Locations
- Figure 3 – Water Elevations and VOC Concentrations in Perched Zone
- Figure 4 – Water Elevations and VOC Concentrations in Upper Saturated Zone
- Attachment A – Field Sampling Logs
- Attachment B – Groundwater Laboratory Analytical Reports and Chain-of-Custody Forms
- Attachment C – Soil Gas Laboratory Analytical Reports and Chain-of-Custody Forms

EXHIBIT 46

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF ORANGE

-oOo-

ORANGE COUNTY WATER DISTRICT,
Plaintiff,

vs.

No. 04CC00715

NORTHROP CORPORATION; et al.,
Defendants.

/

DEPOSITION OF KEN ERWIN
VOLUME I

February 11, 2008 at 10:00 (10:10) a.m.

Before: ERIC L. JOHNSON
RPR, CSR #9771

Taken at:
Costa Mesa, California

1 solvent use associated with the Page Court facilities
2 that we are talking about, 41, 42 and 43, was associated
3 with degreasing metal parts and not some other function?

4 A. Yes.

5 Q. If you look at Exhibit 3, there are two
6 degreasers listed as being present in the Y-41 building
7 on Page Court.

8 Do you see that?

9 A. Yes, I do.

10 Q. And were there degreasers at that location as
11 well?

12 A. I recall one. There may have been two
13 obviously, but I recall one.

14 Q. And did that one use TCA during the time that
15 you were employed there?

16 A. Yes.

17 Q. And were you informed by Northrop employees,
18 who were in a position to know, that TCE had been used
19 earlier in time at that location?

20 A. Yes.

21 Q. Y-43 is not listed on this document as having a
22 degreaser.

23 Do you recall if it did or didn't?

24 A. I do not recall.

25 Q. Let's go back to Exhibit 2 now.

1 Facility one is the Y-1 EMD facility that we
2 have been discussing, and facility two is listed as
3 Y-19.

4 Do you see that?

5 A. I saw it earlier.

6 Q. It is on the upper right-hand portion of the
7 map.

8 A. Yes.

9 Q. What was located at facility two? During the
10 time Northrop owned and operated.

11 A. Right. Northrop never owned that building.

12 Q. I misspoke. Thank you for correcting me.

13 During the time Northrop leased and operated
14 that facility, what was there?

15 A. It was some subassembly operations going on
16 that at one time we even had some work going on there
17 that supported the Trident and the Poseidon submarine
18 program for the U.S. Navy.

19 Q. And did that include subassembly of wiring?

20 A. There was some wiring harnessing going on over
21 there in one section. It wasn't a real large section,
22 but some wiring harness, yes.

23 Q. Were other metal parts being used in the
24 subassembly process at facility two?

25 A. Some.

1 Q. And, therefore, there would have been some
2 degreasing at that location?

3 A. Right.

4 Q. Was it your understanding that historically TCA
5 was being used during your employment at that location?

6 A. Yes. That building was actually not leased
7 until after I began working there.

8 Q. And approximately when was that, that it was
9 leased?

10 A. I -- I don't know for sure. We only -- we
11 didn't have the building that many years.

12 Q. I am looking through --

13 A. I would have -- it would be a guess. I would
14 rather not guess. I don't know when we leased the
15 building.

16 Q. I would like your best estimate of how many
17 years that facility was leased and used by Northrop,
18 with the understanding that it is an estimate.

19 A. Four years, possibly.

20 Q. And during that entire period of time, would
21 there have been some degreasing?

22 A. There would have been some.

23 Q. Facility three on this particular map is the
24 Page Court buildings 41, 42, and 43, correct?

25 A. Yes.

1 Q. That's outside the Y-1 building?

2 A. Well, it is relatively farther south. It is
3 probably about -- well, maybe mid-way between the Y-1
4 building and the Y-2 building.

5 Q. In a paved area?

6 A. It was -- well, it was -- the area itself, the
7 facility itself, was not just paved, it was cement.
8 Very, very thick cement. Secondary containment sumps
9 beneath them. I mean with sumps beneath them with
10 secondary containment beneath that with electronic
11 monitoring installed for secondary -- for notification
12 in the event you did have a leak that went -- that
13 actually left one of those containment sumps.

14 Q. So any spill in that area would have, by
15 design, gone to a containment sump and there would have
16 been an electronic monitor to detect the presence of
17 what?

18 A. Right.

19 Q. What would it detect? Water --

20 A. It would detect anything.

21 Q. -- chlorinated solvents? What?

22 A. It would detect anything. Even water leaving
23 that.

24 Q. Okay. And when was that facility built?

25 A. This is a guesstimation, so to speak. I

1 not they were still there in 1990, I can't attest to
2 that.

3 Q. Do you know if there were any spills recorded
4 after the date of this letter, which is May 15th, 1987?

5 A. May 15th, 1987?

6 Q. If you look at the list of spills --

7 A. Right.

8 Q. -- and the date on your letter, I am asking you
9 to mentally think back and tell me if you know of any
10 spills after those listed here.

11 A. I don't know of any. All I know is at the time
12 of this letter, these were the records that were
13 available and these were the ones that were listed.

14 Q. If you recall in Exhibit 6, we had a spill in
15 1990.

16 A. Okay.

17 Q. That should have been recorded in the same
18 system, correct?

19 MR. SMITH: Objection -- sorry. Did you
20 complete? Objection; it is argumentative.

21 THE WITNESS: It is very likely it could have
22 been in the same system; however, this letter
23 significantly predates that spill report.

24 MR. MILLER: Q. Right. I don't disagree with
25 you. It clearly does.

EXHIBIT 47

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF ORANGE

-oOo-

ORANGE COUNTY WATER DISTRICT,
Plaintiff,

vs.

No. 04CC00715

NORTHROP CORPORATION; et al.,
Defendants.

/

DEPOSITION OF KEN ERWIN
VOLUME II

February 12, 2008 at 10:00 (10:04) a.m.

Before: ERIC L. JOHNSON
RPR, CSR #9771

Taken at:
Costa Mesa, California

1 A. The clarifiers that I know of were not used for
2 processing of solvents, they were used for processing of
3 other process chemicals. Again, the process lines
4 within building Y-2 were essentially shut down when I
5 arrived there and the building was not used for
6 long-term, specific purposes.

7 Q. It indicates they took ten samples at that
8 location, and it says the results are reflected in
9 Table Y-2-1. Let's see if we can find the results.

10 On the immediately following pages, there was
11 discussion of clarifier sampling. And Table Y-2-1
12 appears at page I-8 of the report and following. It
13 shows some detection of toluene and one other chemical.
14 Okay.

15 If you could turn to report page J-1. This
16 describes an above-ground storage tank for TCA.

17 Do you see that?

18 A. I see that.

19 Q. During the entire time that you worked for
20 Northrop, did they have an above-ground storage tank for
21 solvents?

22 A. Which location are you referring to?

23 Q. The Anaheim facilities.

24 A. I understand that. I mean, there was solvents
25 used in Y-12, there was solvents used in Y-1, and there

1 were some solvents used when they did degreaser work in
2 Y-2.

3 Q. Did you have an above-ground storage tank for
4 each of those facilities, for solvents?

5 A. I can't recall specifically on the different
6 ones. I know that in Y-12, at one time there was an
7 above-ground storage tank that was put in within the
8 secondary containment area that had installed monitoring
9 within it, its secondary containment, and that was done
10 for the expediency of cost and having to have tanker
11 trucks come out and transfer that material in.

12 And Y-1, I really can't recall if we had one at
13 Y-1 and at Y-2.

14 Q. Did the above-ground storage tanks have any
15 containment area in case of drips or spills?

16 A. That's what I just indicated. It had a
17 secondary containment. It had a monitoring system
18 within it, electronic monitoring system, that would
19 actually sound an audible alarm in the event there was a
20 release within the secondary containment.

21 Q. Would it audible alarm if there was solvent in
22 the secondary containment?

23 A. It would even provide an audible alarm, in some
24 cases, if there was even water because it was based upon
25 the liquid level and there was a depressed area within

1 the secondary containment that was even below grade of
2 the cement foundation. Usually over in the corner is
3 where they would put those.

4 Q. And do you know when the alarm was first
5 installed?

6 A. At the time that the secondary containment was
7 installed for the installation of that tank.

8 Q. So from the time the tank was installed, it had
9 secondary containment?

10 A. Yes, sir.

11 Q. Do you know if there were any tanks without
12 secondary containment that historically contained
13 solvents, anywhere on Northrop's Anaheim properties?

14 A. I can't recall any specifically.

15 Q. Generally?

16 A. Not even generally.

17 Q. Please turn to M-1 of the same exhibit, 21.

18 The first sentence states, "OHM removed a sewer
19 lateral associated with the Y-1 production area, as
20 indicated in figures Y-1-1 and Y-1-2." And then it
21 describes how they did it.

22 And it says: "The lines were uncovered and
23 inspected for physical integrity. The soils within the
24 trench were inspected for any staining, moisture, or
25 discoloration. Sewer laterals were removed and staged

1 for evaluation, testing, and disposal."

2 Do you see that?

3 A. I see that.

4 Q. Does that help refresh your memory on the
5 likely source of the photographs of the sewer pipe,
6 namely that it was the pipe for the Y-1 building? When
7 I say "the photographs," I am referring to Exhibit 11.

8 A. Yes, I recall discussion of these. It doesn't
9 necessarily refresh my memory. I mean, those could have
10 been from -- they're the ones that are being referenced
11 here in the OHM report, but not specifically.

12 Q. If you assume that OHM was doing all of the
13 demolition work associated with abandoning Northrop
14 properties and that the only discussion of excavation of
15 a sewer line is for the Y-1 building, would that make it
16 more likely that those photographs came from that
17 location, in your mind?

18 MR. SMITH: Objection. The assumption is
19 contrary to fact. Lack of foundation; calls for
20 speculation.

21 THE WITNESS: My response to that would be that
22 that's not the only excavation because I explained to
23 you yesterday that there was actually an excavation that
24 separated the sanitary sewer from the industrial sewer,
25 so there was excavation done at that time.

EXHIBIT 48

*Rec'd to file
Jan. 2002*

SOIL GAS SURVEY

VICINITY OF
FORMER MOORE BUSINESS FORMS SITE
FULLERTON, CALIFORNIA

SEPTEMBER 1992

Conducted in 1991
by
Wm. Dennis Merklin

Water Resource Control Engineer
Groundwater Investigation Section

California Regional Water Quality Control Board
Santa Ana Region

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FIGURES FIGURES NO. 1 THROUGH NO. 3

APPENDIX NO.1	SITE ACCESS REQUEST LETTERS TO: PACIFIC SEACRAFT CORPORATION; CALIFORNIA SHIRT SALES; JOHNSON CONTROLS - BATTERY DIVISION AND MCLACHLAN INVESTMENTS COMPANY
APPENDIX NO.2	FIELD MAPS AND RECORDS OF PETREX TUBE PLACEMENT LOCATIONS AND I.D. NUMBERS; SOIL GAS INVESTIGATION SITES NO. 1 THROUGH NO. 4
APPENDIX NO.3	PHOTOGRAPHS OF PETREX TUBE PLACEMENTS; SITE NO.1 - PACIFIC SEACRAFT CORPORATION AND SITE NO. 2 - CALIFORNIA SHIRT SALES (FORMER MBF SITE)
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APPENDIX NO.5	ACCOMPANYING FORMS SUBMITTED WITH PETREX TUBE SAMPLES - 1) PETREX CHAIN-OF-CUSTODY FORM; 2) BAG CONTENT INFORMATION SHEETS (SITES #1 & #2 AND SITES #3 & #4); 3) WIRE SUBMITTAL FORM
APPENDIX NO.6	PETREX FINAL REPORT AND LABORATORY ANALYSES

EXECUTIVE SUMMARY

In the initial stage of a site investigation at the former Moore Business Forms (MBF) facility in Fullerton, 500 parts per billion (ppb) of trichloroethene (TCE) was detected in a monitoring well that was installed at the site. A subsequent groundwater investigation detected similar TCE concentrations in this well and concentrations of over 50 ppb of TCE in other monitoring wells that were subsequently installed in other areas at the site. Continued sampling found TCE concentrations in the groundwater to range from 50 ppb to 200 ppb. Although volatile organic compounds (VOCs) were non-detectable in composite and discrete soil samples taken from soil borings during these two investigations, TCE and tetrachloroethene (PCE) were detected in the soil vapor at the site in two subsequent soil gas surveys.

In an effort to determine if the TCE found in the groundwater beneath the site was due to discharges from the former MBF facility or from adjacent off-site sources and to confirm the previous high soil gas levels at the former MBF site, a soil vapor survey using Petrex soil gas collection tubes was conducted by Board staff at the former MBF site (now California Shirt Sales) and at three sites which are adjacent to, and up-gradient of, the California Shirt Sales site.

A total of 17 soil gas collection tubes were installed at the four sites. Six tubes were installed at the Pacific Seacraft facility located south of the eastern half of the California Shirt Sales site. Three tubes were installed on the California Shirt Sales site. Four tubes were installed at the Johnson Controls Battery Division facility located east of the California Shirt Sales site, and four tubes were installed at the property of McLachlan Investments, which had been occupied by numerous tenants, and is currently occupied by Composite Container. The building at this site was recently Northrop Corporation's Y-19 Building, and is located southeast of the California Shirt Sales site.

The results of the soil gas survey showed that the highest TCE soil vapor flux was found in the southeast area of the former MBF site. The data also showed that the off-site locations closest to this area displayed a high TCE flux, although significantly lower than that found at the former MBF site. Similarly, the highest PCE soil vapor flux was found in the northeast area of the former MBF site and displayed a similar pattern as the TCE. The data supports the premise that TCE and PCE were previously discharged at the former MBF site. In addition, significantly high TCE and PCE vapor flux was found at a location on the McLachlan Investments Company property. It is recommended that Moore Business Forms conduct further soil investigations and groundwater monitoring, and that McLachlan Investments conduct a soil investigation in the area of high TCE and PCE soil gas.

BACKGROUND

The former MBF site is located at 800 South Raymond Avenue in Fullerton, California (Figure 1). MBF purchased the property and began operations in 1957. Prior to 1957, the property, and most properties in the surrounding area, were orange groves. The area surrounding MBF became industrialized at approximately the same time as the MBF site. MBF occupied this site until 1983, when it sold the property to Raymond Associates (a general partnership). The facility remained idle between 1983 and 1988, when it was obtained by First Interstate Bank by foreclosure from Occidental Land Research (the principal owner). During these proceedings, Lincoln Property Company became interested in purchasing the property and hired Ebasco Environmental to conduct two phases of site investigations, as part of the property purchase procedure. After these two investigations were completed, Lincoln Properties decided not to purchase the property. Later in 1988, the property was sold to Ralph Horowitz and remained idle for almost a year. In 1989, Mr. Horowitz sold the property to Karl Sator, owner of California Shirt Sales. The facility has since been used as a warehouse outlet of tee-shirts, for California Shirt Sales.

In September and October 1988, a Phase I Site Assessment was performed at the former MBF site. This assessment was performed as part of an environmental investigation for a property transfer. The assessment consisted of drilling and sampling 21 soil borings, drilling, installing and sampling one groundwater monitoring well and assessing any impact from the presence of five underground storage tanks (USTs). Three of the five USTs (one containing gasoline, one containing diesel oil and one containing wax) had previously been removed, and verification samples were previously taken at these locations. One of the remaining two USTs contained photo lab waste and the other contained oil. These USTs were subsequently removed and verification samples taken. Soil borings were drilled to a maximum depth of 25 feet below ground surface (bgs), with the exception of two borings which were advanced to depths of 62 feet and 90 feet bgs. Soil samples from the soil borings were collected at a depth of one foot bgs and at five foot intervals thereafter. Five sets of composited samples from the various borings were taken at depths of one foot, five feet or a combination of both depths. No volatile organic compounds (VOCs) were detected in any of these composite samples with the exception of one which contained a small concentration of methylene chloride and toluene. Four discrete soil samples from two borings were analyzed for VOCs at depths of 2.5, 5, 40 and 45 feet bgs. None were detected. A monitoring well boring was drilled to a depth of 135 feet bgs. This well was screened in the interval between 85 feet bgs and 125 feet bgs. The groundwater sample taken from this monitoring well (MW-1) contained trichloroethene (TCE) at a

concentration of 500 parts per billion (ppb), in addition to 1.8 ppb of 1,2-dichloroethane (1,2-DCA) and 2.0 ppb of 1,1-dichloroethene (1,1-DCE). Groundwater depth was measured at 116.5 feet bgs. The report of this investigation, titled "Site Characterization Report - Former Moore Business Forms Property" was issued in October 1988. The presence of high TCE concentrations in the groundwater prompted the initiation of a Phase II Site Characterization.

The Phase II Site Characterization was performed in November 1988. This investigation consisted of drilling, sampling soil and installing and obtaining samples from three new monitoring wells. Each of the three wells were installed to a depth of 135 feet bgs. Unlike MW-1, however, these three wells were screened at the interval between 110 feet bgs and 135 feet bgs. MW-2 was installed in the northeast corner, MW-3 was installed near the northwest corner and MW-4 was installed in the southwest corner of the property near MW-1. One soil sample from each well boring, at a depth near the capillary fringe (115 feet bgs), was analyzed for VOCs. No VOCs were detected in the three samples. Analysis of the groundwater samples, however, yielded significant concentrations of TCE in all four wells. Groundwater depth was measured at 118 feet bgs. Samples from both MW-2 and MW-3 contained TCE concentrations of 55 ppb, while MW-4 contained TCE at 56 ppb. As a QA/QC check, MW-1 and MW-4 were resampled and the samples were analyzed at three different laboratories. The results for MW-1 yielded TCE concentrations of 150 ppb, 500 ppb and 350 ppb, while the results for MW-4 yielded TCE concentrations of 40 ppb, 60 ppb and 57 ppb. The data had shown that a fairly consistent groundwater TCE concentration ranging between 40 and 60 ppb was present beneath the former MBF site. However, the groundwater in the area around MW-1 contained a concentration ranging between 150 ppb and 500 ppb. The report concluded that since no TCE had been found in the soil and since TCE was never documented as being used at the facility, the TCE contamination in the groundwater was emanating from an up-gradient source, and not from the former MBF site. The results and conclusions of this investigation were issued in a report titled "Phase II Site Characterization - Former Moore Business Forms Property", in December 1988.

During the period when the Phase II site characterization was being performed (October 1988 to January 1989), the Orange County Water District (OCWD) conducted a static soil gas survey, using Tracer Research, to determine the approximate areal extent of VOCs within the Orange County Groundwater Basin and to assist in locating potential source areas. In January 1989, Tracer Research obtained soil gas samples at four locations along the perimeter of the former MBF site. With the exception of tetrachloroethylene (PCE) at three of the locations, the results yielded VOC soil vapor concentrations in the hundredths to the ten-thousandths of a ppb in all samples. PCE soil vapor concentrations of 4.0 and 0.7 ppb were found at two locations in the extreme northeast, while a third

location on the extreme west side, near MW-1, contained a PCE concentration of 0.9 ppb. Subsequently, as part of the activities of the property transfer, a Tracer Research soil gas survey was performed on the former MBF site by Ebasco Environmental for the Lincoln Property Company. Eight sampling locations on the site were chosen. The results yielded much higher TCE and PCE concentrations than the OCWD survey. The location with the highest concentrations of VOCs was in the northern area along the east side of the property. TCE was measured at 380 ppb and PCE was measured at 1800 ppb. The second highest VOC concentrations were found along the east side about mid-way south of the property. TCE was measured at 2 ppb, PCE was measured at 55 ppb and trichloroethane (TCA) was measured at 6 ppb. At a location in the extreme southeast corner, TCE was measured at 25 ppb and PCE was measured at 0.04 ppb. Finally, at a location in the southeast parking area, TCE was measured at 87 ppb while PCE was measured at 0.02 ppb. Three sampling locations surrounding MW-1 and on the west side of the property yielded concentrations in the thousandths and ten-thousandths of a ppb range. The bulk of the high soil gas TCE and PCE concentrations were found on the eastern side of the property. Most of the wells are located on the west side of the property.

Board staff issued a letter on February 27, 1989, requesting MBF to submit a work plan to conduct an additional subsurface investigation, including the installation of up-gradient monitoring wells and analysis of soil samples from the well borings. MBF was also requested to submit a completed Chemical Use Questionnaire. The Questionnaire was submitted within the requested time period but the work plan was not submitted until August 24, 1989.

The Phase III Subsurface Investigation was conducted for MBF by Roux Associates between December 1989 and February 1990. In December, all of the monitoring well elevations were re-surveyed and water level measurements were taken to produce a current potentiometric groundwater elevation contour map. Two new up-gradient monitoring wells were proposed to be installed in the southeast corner of the site. One well was proposed along the eastern boundary and the other well was proposed along the southern boundary. However, by the time Board staff had arrived at the site, the southern boundary monitoring well (MW-5) boring was drilled past the mid-point of the site, on the western side. It was explained that the decision to move this location was made in the field because of access problems in the eastern half of the site and that this well location was hydraulically up-gradient of MW-1. With the understanding that a second up-gradient well would be installed in the southeast area, which is hydraulically up-gradient of the area of high VOC soil gas concentrations, Board staff did not object to this well being installed. However, the second well was never installed. No soil samples from the well boring were analyzed in the laboratory for VOCs and only field headspace vapor analyses were performed. Also, this data never appeared in the report. After initial well development, a sample

of MW-5 taken on January 19, 1990, yielded a TCE concentration of 44 ppb. A Regional Board split sample yielded 48 ppb of TCE, along with 4.8 ppb of 1,1,1-TCA and 4.0 ppb of 1,1-DCE. Monitoring wells MW-2, MW-3 and MW-4 were then sampled on January 22, 1990, yielding TCE concentrations of 51 ppb, 120 ppb and 220 ppb, respectively. MW-1 was dry due to falling groundwater levels and thus could not be sampled. On February 12 and 13, 1990, Roux conducted a second round of sampling. MW-2, MW-3, MW-4 and MW-5 yielded 58 ppb, 180 ppb, 210 ppb and 200 ppb of TCE, respectively. The results indicated that the wells on the west side of the site had increased from around 50 ppb to around 200 ppb of TCE since November 1988. It appears that, Roux's conclusion that the TCE was originating from an off-site source was based on only one of two data points from MW-5 (the second round sample of 200 ppb).

Despite repeated Board staff requests for MBF to install the second up-gradient well and continue well monitoring, no further work has been performed. As a result, Board staff elected to conduct this soil gas survey to gather additional evidence of TCE contamination at and near the former MBF site.

HYDROGEOLOGIC INFORMATION

The former MBF site is located in the forebay zone of the Orange County Groundwater Basin. Most of the recharge of groundwater entering this basin occurs within a several mile radius of the site. The Santa Ana River, and the OCWD recharge basins, are located within two miles of the site. Several flood channel retarding basins, which also act as recharge basins, are located within one mile of the site. The recharge zone consists of the uppermost sediments, which are of Holocene-age alluvium and colluvium, consisting of primarily poorly sorted sands, clayey sands, gravel and silt. The surface topography is relatively flat, with a gentle southwest slope from the Coyote Hills, approximately 1.5 miles to the north, to the Pacific Ocean.

The depth to groundwater beneath the former MBF site has ranged from 116 feet to over 125 feet bgs. Recent water level measurements performed at the site by OCWD found the depth to water to be between 131 and 133 feet bgs. The reason for the drop in water levels is primarily due to the drought, with the lack of normal recharge and the increased pumping of water wells. The City of Fullerton's Kimberly Well No. 1 is located directly adjacent to the northeast corner of the former MBF site. This well pumps water all year and is part of the City of Fullerton's water supply. The general groundwater flow direction is to the west-southwest. However, the groundwater flow direction apparently changes seasonally. The predominant west to southwest flow direction occurs most of the year, between June and January. A shift to the west-northwest mainly occurs between February and May when the rains recharge groundwater, driving the flow away from the Santa Ana River. Much of this was not known prior to the Phase III Investigation, and the placement of MW-5 was based on the less frequent winter-spring flow direction.

PROJECT DESCRIPTION

Four sites were selected for soil gas sampling (see Figure 1). With a limited number of soil gas sampling tubes available, only a limited number of sampling locations per site were selected. The four sites that were selected, and their rationale for selection, are as follows:

Site #1 - Pacific Seacraft Corporation

This facility uses organic resins and solvents (reportedly not TCE or PCE), and is hydraulically up-gradient of the former MBF site during the short winter-spring seasonal groundwater flow to the west-northwest.

Site #2 - California Shirt Sales (former MBF site)

Previous soil vapor survey readings indicated VOC levels were much higher than the surrounding area. The sample locations were chosen to confirm the prior high soil gas levels.

Site #3 - Johnson Controls - Battery Division

This site is located directly east, and hydraulically up-gradient, of the former MBF site through most of the year. However, organic solvents such as TCE and PCE are not documented as ever being used at this facility.

Site #4 - McLachlan Investment Company Building (1401 East Orangethorpe Avenue)

This site is also located hydraulically up-gradient of the former MBF site during the winter-spring period of the year. It has also been the site of various past industrial facilities, most recently Northrop Corporation (1981 to 1990 as a warehouse) as well as several machining and fabrication operations, including the Memorex Corporation and the Sylvania Corporation. A portion of the building is currently occupied by Composite Containers and is used as an office and small warehouse.

Prior to installing the Petrex soil gas sampling tubes, site access permission had to be obtained from each site owner. For Site #1, permission was obtained from Mr. Alan Massey and Joe Lock from Pacific Seacraft Corporation. For Site #2, permission was obtained from Mr. Karl Sator, owner of California Shirt Sales. For Site #3, permission was obtained from Mr. James Cox, Vice President, and Mr. Chuck Burks, Environmental Specialist, from Johnson Controls - Battery Division. For Site #4, permission was obtained from Mr. Don Sutro, Vice President of McLachlan Investment Company. Copies of the site access permission request letters, including the proposed locations for installing Petrex tubes, are included in Appendix No. 1. Prior to the soil gas survey, we also contacted Roux Associates, environmental contractors for Moore Business Forms, to inform them of the dates we were going to perform the survey. They had previously requested that we notify them so they could have an observer present while Board staff performed the survey.

On November 14, 1991, 9 Petrex soil gas collection tubes were installed at Site #1 and Site #2 by Dennis Merklin and Kamron Saremi of Board staff. At both sites, drilling through asphaltic concrete was necessary to place the tubes. This was accomplished by using a Boche Rotary Hammer with a 2-inch drill bit. The soil was then augered down to 12 to 18 inches bgs using both the drill bit and a hand trowel. Six collection tubes, including one dual wire tube, were installed at Pacific Seacraft Corp. (Site #1). The samples were labeled #1 through #7. Four tubes (Samples #1, #2, #3, #4 and #6) were placed in each of the four corners of the facility, with the two tubes in the back corners placed between approximately 5 and 12 feet from the boundary with the southeast corner of the former MBF site. The tube in the northeast corner of the site was a dual QA/QC collector wire tube, and the samples were labeled #3 & #4. The fifth tube (Sample #5) was placed near the hazardous materials storage area. The sixth tube (Sample #7) was placed in the parking lot in the southwest corner of the property. Each tube at this site had a clean cotton string tied to the cap screw thread area, which was then run to just below the ground cover, for easy retrieval.

Three collection tubes were installed in the eastern area of the former MBF site (Site #2), where high soil gas readings were found in previous investigations. Two tubes were placed in the driveway between the building and the east property fence line. One of these tubes (Sample #8) was placed near the gate at the northeast corner of the property. The second tube at the next location contained dual QA/QC collector wires, labeled Samples #9 & #10, and was placed at about the mid-point of the property. The third tube (Sample #11) was placed in the middle of the parking lot area in the southeast section of the property. Having run out of the cotton string which was used at the previous Pacific Seacraft Corp. site, a strip of plastic mylar was tied and arranged for the 3 tubes at this site, in the same manner as for the previous site.

To be certain that the plastic mylar did not contribute any VOCs to the tube while placed in the ground, a site blank was created (Sample #101) by keeping a piece of the mylar material in the tube the entire time of the survey, and having it analyzed with the other tubes. The location of each tube was accurately mapped, recorded on diagrams and photographed. The field maps and records are presented in Appendix No. 2, while the photographs are presented in Appendix No. 3. All the tubes were installed in accordance with standard protocol (Appendix No. 4).

On November 15, 1991, 8 Petrex collection tubes were installed at Site #3 and Site #4 by Dennis Merklin and Robert Holub. Four collector tubes were installed at Johnson Controls - Battery Division (Site #3), along its western border with the former MBF site. These tubes were labeled Samples #12 through #15. At each sample location, the soil was hand augered to a depth of between 12 and 18 inches bgs. Samples #12 and #14 were placed on the west side of the railroad tracks and Samples #13 and #15 were placed on the east side of the tracks. Sample #12 was placed opposite Sample #8 on the former MBF site while Sample #13 was placed almost opposite Samples #9 & #10 on the former MBF site. Sample #14 was placed further south, opposite approximately halfway between the end of the driveway and the southeast parking area (between Samples #9 & #10 and #11) on the former MBF site. Sample #15 was placed in the southwest corner of the Johnson Controls site, below the base of an old loading ramp, on the east side of the railroad spur tracks, opposite the southern part of the former MBF site parking area.

Four collector tubes were also installed at the McLachlan Investments property (Site #4), along the railroad spur tracks and the Pacific Seacraft site boundary fence. These tubes were labeled Samples #16 through #19. Sample #16 was placed in the northwest corner of the site, on the west side of the railroad spur, between the tracks and the Pacific Seacraft site fence. Sample #17 was placed further south on the east side of the tracks, along the northwest corner of the building, under a loading platform door. Sample #18 was placed further south, about at the mid-point of the building on the west side of the railroad spur, between the tracks and the Pacific Seacraft site fence. Lastly, Sample #19 was placed on the west side of the southern end of the railroad spur, between the Pacific Seacraft site fence and the tracks.

The boundary between the Pacific Seacraft fence and the McLachlan Investments building continues further south, but there was very little room to proceed down further, and it was decided that this was probably beyond the influence of any up-gradient sources which could effect the former MBF site. No photographs were taken at these sites. However, the sample tube locations were mapped and recorded on diagrams in the same manner as the previous two sites. These maps also appear in Appendix No. 2. In addition to the previously mentioned Site Blank (Sample #101), a Trip Blank, Sample

#102, was brought to both sites on both days. This tube was not opened. On both days, Greg Murphy (Roux Associates) was present at the sites to observe the installation of the soil gas collection tubes.

On December 19, 1991, all of the tubes were removed from the ground and were sealed and labeled. Greg Murphy was present again to observe the removal of the tubes. The tubes had been in the ground for five weeks. Each set of tubes from each of the two days, along with the two Blanks, were packaged in separate bags, wrapped in protective packaging and boxed for shipment. The tubes were shipped to the Northeast Research Institute (NERI) for chemical analysis on December 26, 1991. Accompanying information included the Chain Of Custody Forms, the Wire Submittal Forms and the Bag Content Information Sheets. Copies of each set of these forms are included in Appendix No. 5.

RESULTS

PCE was detected in every sample at all four sites. TCE was also detected at every site, but only in 11 of the 17 samples. In addition, aliphatic hydrocarbons were detected in every sample at each site. Aromatic hydrocarbons were detected in all samples at Pacific Seacraft Corp. and the former MBF site. At Johnson Controls - Battery Division and McLachlan Investments Company, aromatic hydrocarbons were detected in three of the four samples at each site. Aromatic hydrocarbons were also detected in Site Blank #101 at the former MBF site, although at a significantly lower ion count. Therefore, it is believed that the aromatic hydrocarbons were emanating from the plastic mylar used to tie the sample tubes in place. Sample #101 did not contain any TCE, PCE or aliphatic hydrocarbons. A Final Report of chemical analysis, including the ion counts and GC Graphs for each sample and blank, plus a short narrative evaluation of the results, was received from NERI on January 21, 1992. A copy of this Final Report is included in Appendix No. 6.

Figure 2 shows the four sites, all sample locations, and the ion counts of TCE found at each sample location, while Figure 3 shows the same for PCE. TCE was detected in 3 of the 6 samples at the Pacific Seacraft Corp. site, 2 of the 3 samples at the former MBF site, 3 of the 4 samples at the Johnson Controls site and 3 of the 4 samples at the McLachlan Investments site. The highest ion count of TCE was 233052, found in Sample #11 located at the center of the southeast parking lot area of the former MBF site. The highest ion count of PCE was 232656, also found at this site, in Sample #8 located in the northeast corner driveway entrance. However, no TCE was found in this sample. The TCE ion counts which were quantified ranged from 1262 to 233052. PCE ion counts ranged from 2032 to 232656.

The aliphatic hydrocarbons consist of 6, 10 and 11 carbon chain compounds and dienes. The ion counts ranged from 895 in Sample #18, located along the railroad spur on the McLachlan Investments site, to 119959 in Sample #12, located in the northwest corner of the Johnson Controls site. The aromatic hydrocarbons consist not only of benzene, toluene, xylenes and ethylbenzene, which are gasoline components, but other volatile organic chemicals (VOCs) containing up to 9 carbon chain compounds. It is these higher carbon chain VOCs which most probably emanated from the plastic mylar material which was used at the former MBF site. The ion count in this site blank (Sample #101) was 2014. The ion counts which were quantified ranged from 4187 in Sample #16 at the northwest corner of the McLachlan Investments site, to 832454 in Sample #11 at the former MBF site.

The analytical results for the four sites are summarized in Tables 1 through 4.

TABLE 1 - ANALYSIS OF SOIL GAS COLLECTION TUBES AT SITE #1
PACIFIC SEACRAFT CORPORATION
(measured in ion counts)

<u>Sample</u>	<u>TCE</u>	<u>PCE</u>	<u>Aliphatic Hydrocarbons</u>	<u>Aromatic Hydrocarbons</u>
1	26472	16007	16009	550240
2	1262	4102	44500	674007
3	124733	7141	18405	507550
5	0	2032	84089	810100
6	0	9673	13160	508219
7	0	12573	14326	151267

Note: Some trichloroethane (TCA) was noted in Sample #1 -
(unquantifiable)

TABLE 2 - ANALYSIS OF SOIL GAS COLLECTION TUBES AT SITE #2
FORMER MBF FACILITY
(measured in ion counts)

<u>Sample</u>	<u>TCE</u>	<u>PCE</u>	<u>Aliphatic Hydrocarbons</u>	<u>Aromatic Hydrocarbons</u>
8	0	232656	205924	344925
9	38085	23584	433488	832454
11	233052	4176	80915	517823
101*	0	0	0	2014

* (Site Blank)

Note: Sample #9 - PCE and TCE values elevated due to interference
with hydrocarbon compounds

TABLE 3 - ANALYSIS OF SOIL GAS COLLECTION TUBES AT SITE #3
JOHNSON CONTROLS - BATTERY DIVISION
(measured in ion counts)

<u>Sample</u>	<u>TCE</u>	<u>PCE</u>	<u>Aliphatic Hydrocarbons</u>	<u>Aromatic Hydrocarbons</u>
12	0	180399	119959	58846
13	1797	14662	2098	0
14	1711	10857	2282	0
15	29057	25624	4389	7000

TABLE 4 - ANALYSIS OF SOIL GAS COLLECTION TUBES AT SITE #4
McLACHLAN INVESTMENT COMPANY
(measured in ion counts)

<u>Sample</u>	<u>TCE</u>	<u>PCE</u>	<u>Aliphatic Hydrocarbons</u>	<u>Aromatic Hydrocarbons</u>
16	4628	16022	3851	4187
17	127368	115053	27853	11765
18	2546	10488	895	0
19	0	3347	42724	11349

Trip Blank

102	0	0	0	0
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DISCUSSION

Our soil gas survey shows a significant TCE hot spot on the former MBF property where the previous Tracer Research soil gas survey detected high TCE concentrations. This area primarily covers the entire southeast corner parking lot area of the site and partially up the southern portion of the east side driveway.

Our soil gas survey shows a significant PCE hot spot on the former MBF property where the previous Tracer Research soil gas survey detected high PCE concentrations. This area is located in the northeast corner of the site and the northern portion of the east side driveway.

Our soil gas survey shows the presence of a significant TCE and PCE hot spot on the McLachlan Investments Company property. This area is located near the first loading platform door along the railroad spur line on the west side of the building.

Since this soil gas survey confirms the other results of the previous Tracer Research soil gas survey, we recommend that Moore Business Forms conduct soil investigations in and around the identified TCE and PCE hot spots on their former site. Because of the presence of TCE and PCE on the site, Moore Business Forms should continue to monitor the on-site groundwater monitoring wells on a quarterly basis.

In addition, since it is unknown which former tenant of 1401 East Orangethorpe Avenue may have been responsible for the TCE and PCE contamination, we recommend that McLachlan Investments, as the current owners of the property, conduct a soil investigation in and around the identified TCE and PCE hot spot.

The soil investigations at both sites should be performed in a manner which will define the magnitude of soil contamination, define the horizontal and vertical extent of soil contamination and to determine if soil remediation is necessary.

DISCUSSION

The highest ion counts of both TCE and PCE were found on the former MBF site, although they were found in different locations. As stated in the results section, the highest TCE count was found in the center of the southeast parking lot area. Although the 3rd highest count was found in Sample #3 on the Pacific Seacraft site, it was located within 10 feet of the southeast parking lot on the former MBF site. Since the nearest sample location to Sample #3 on the Pacific Seacraft site had a significantly lower count, it can be concluded that the very high counts in #3 are related to the same southeast parking lot area on the former MBF site, and not the Pacific Seacraft site. In addition, the 4th highest TCE count was located in the eastern driveway, just north of the parking lot, on the former MBF site. Comparing these results to the previous Tracer Research soil gas study on the former MBF site, there is some correlation. A soil gas concentration of 87 ppm was found in the southeast parking lot area, to the northwest of the highest Petrex soil gas ion count. A concentration of 25 ppm was found in the southeast corner of this lot, very near the 3rd highest count found in Sample #3. A concentration of 2 ppm was found near Sample #9 in the eastern driveway where the 4th highest count was found. The only location which did not correlate was at Sample #8, at the eastern driveway entrance, which had a Tracer Research concentration of 380 ppm, but had a 0 ion count in the Petrex study.

The PCE results

The aliphatic and aromatic hydrocarbons were widespread through all the sites.

However, significant ion counts of both TCE and PCE were found in the other two samples at this site. In addition, the samples from the other sites located closest to the southeast parking lot of the former MBF site also exhibited some of the highest TCE ion counts. These included Sample #3 at the Pacific Seacraft Corporation site and Sample #15 at the Johnson Controls site. While PCE appears more prevalent around the entire area, it also exhibits a similar pattern as the distribution of high TCE ion counts. Samples with the higher PCE ion counts from adjacent sites were located adjacent to some of the samples with high PCE ion counts on the former MBF site.

There were two other apparently isolated areas of elevated TCE and PCE, however, the most extensive area with the highest TCE and PCE soil vapor levels appear to be on the MBF Site, and at most of the other sites' sample points which are closest to their corresponding Site #2 points. The double wire samples (#4 and #10) are used in calibration prior to analyses, thus are not reported.

DISCUSSION

Our soil gas survey shows a significant TCE hot spot on the former MBF property where the previous Tracer Research soil gas survey detected high TCE concentrations. This area is primarily in the southeast corner parking lot area and the east side of the site.

Our soil gas survey shows a significant PCE hot spot on the former MBF property where the previous Tracer Research soil gas survey detected high PCE concentrations. This area is located in the northeast corner of the site.

Our soil gas survey shows the presence of a significant TCE and PCE hot spot on the McLachlan Investments Company property. This area is located near the first loading platform door along the railroad spur line along the west side of the building.

RESULTS

PCE was detected in every sample at all four sites. TCE was also detected at every site, but only in 11 of the 17 samples. In addition, aliphatic hydrocarbons were detected in every sample at each site. Aromatic hydrocarbons were detected in all samples at Pacific Seacraft Corp. and the former MBF site. At Johnson Controls - Battery Division and McLachlan Investments Company, aromatic hydrocarbons were detected in three of the four samples at each site. Aromatic hydrocarbons were also detected in Site Blank #101 at the former MBF site, although at a significantly lower ion count. Therefore, it is believed that the aromatic hydrocarbons were emanating from the plastic mylar used to tie the sample tubes in place. Sample #101 did not contain any TCE, PCE or aliphatic hydrocarbons. A Final Report of chemical analysis, including the ion counts and GC Graphs for each sample and blank, plus a short narrative evaluation of the results, was received from NERI on January 21, 1992. A copy of this Final Report is included in Appendix No. 6.

Figure 2 shows the four sites, all sample locations, and the ion counts of TCE found at each sample location, while Figure 3 shows the same for PCE. TCE was detected in 3 of the 6 samples at the Pacific Seacraft Corp. site, 2 of the 3 samples at the former MBF site, 3 of the 4 samples at the Johnson Controls site and 3 of the 4 samples at the McLachlan Investments site. The highest ion count of TCE was 233052, found in Sample #11 located at the center of the southeast parking lot area of the former MBF site. The highest ion count of PCE was 232656, also found at this site, in Sample #8 located in the northeast corner driveway entrance. However, no TCE was found in this sample. The TCE ion counts which were quantified ranged from 1262 to 233052. PCE ion counts ranged from 2032 to 232656.

The aliphatic hydrocarbons consist of 6, 10 and 11 carbon chain compounds and dienes. The ion counts ranged from 119959 in Sample #12, located in the northwest corner of the Johnson Controls site, to 895 in Sample #18, located along the railroad spur on the McLachlan Investments site. The aromatic hydrocarbons consist not only of benzene, toluene, xylenes and ethylbenzene, which are gasoline components, but other volatile organic chemicals (VOCs) containing up to 9 carbon chain compounds. It is these higher carbon chain VOCs which most probably emanated from the plastic mylar material which was used at the former MBF site. The ion count in this site blank (Sample #101) was 2014. The ion counts which were quantified ranged from 832454 in Sample #11 at the former MBF site, to 4187 in Sample #16 at the northwest corner of the McLachlan Investments site.

The analytical results for the four sites are summarized in Tables 1 through 4.

FIGURES

*This page is white
Approximate 4 1/2 x 6 1/2
with 1/2 in yellow
paper like the Museum
specimen. OK?*

FIGURES NO. 1 THROUGH NO. 3

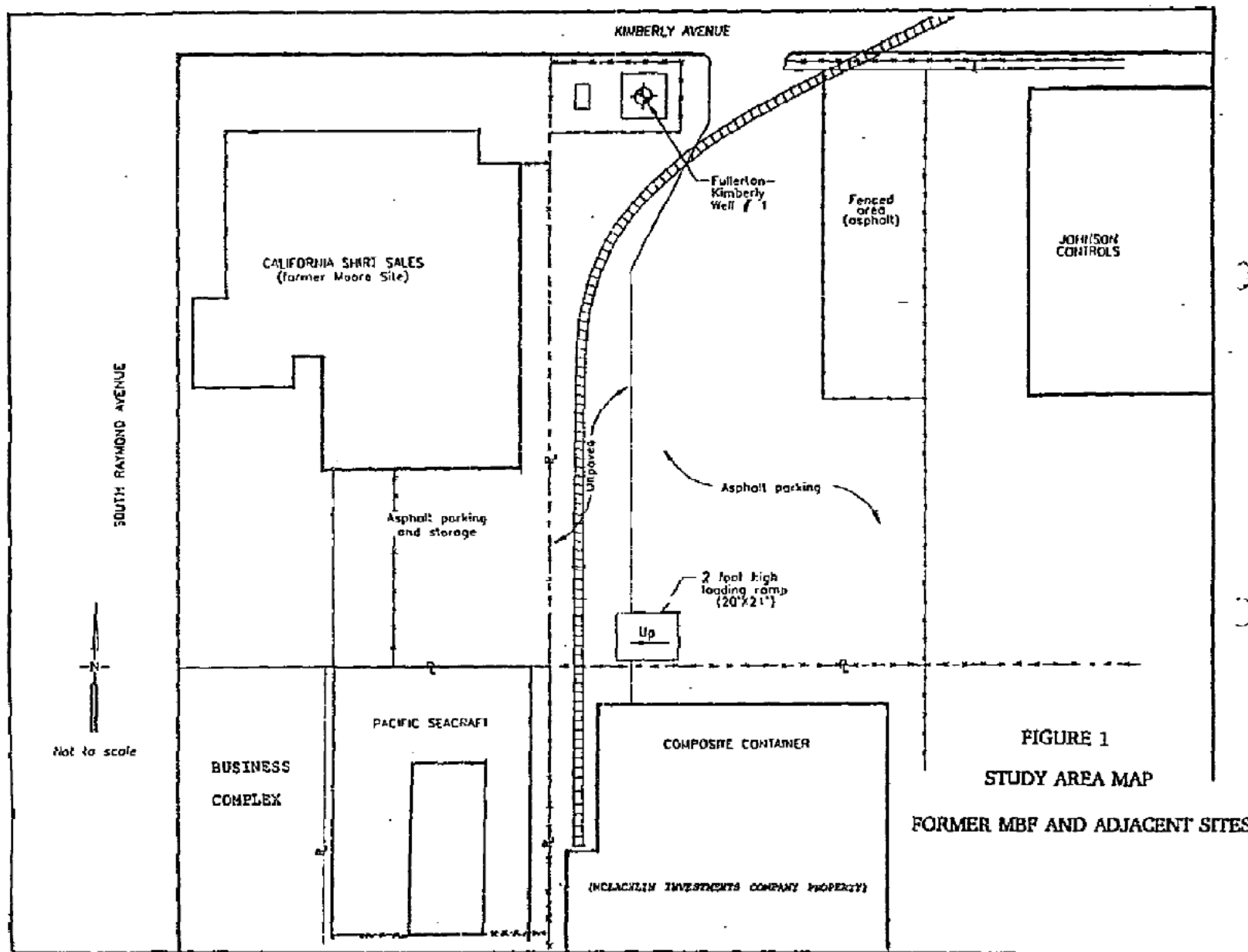


FIGURE 1
STUDY AREA MAP
FORMER MBF AND ADJACENT SITES

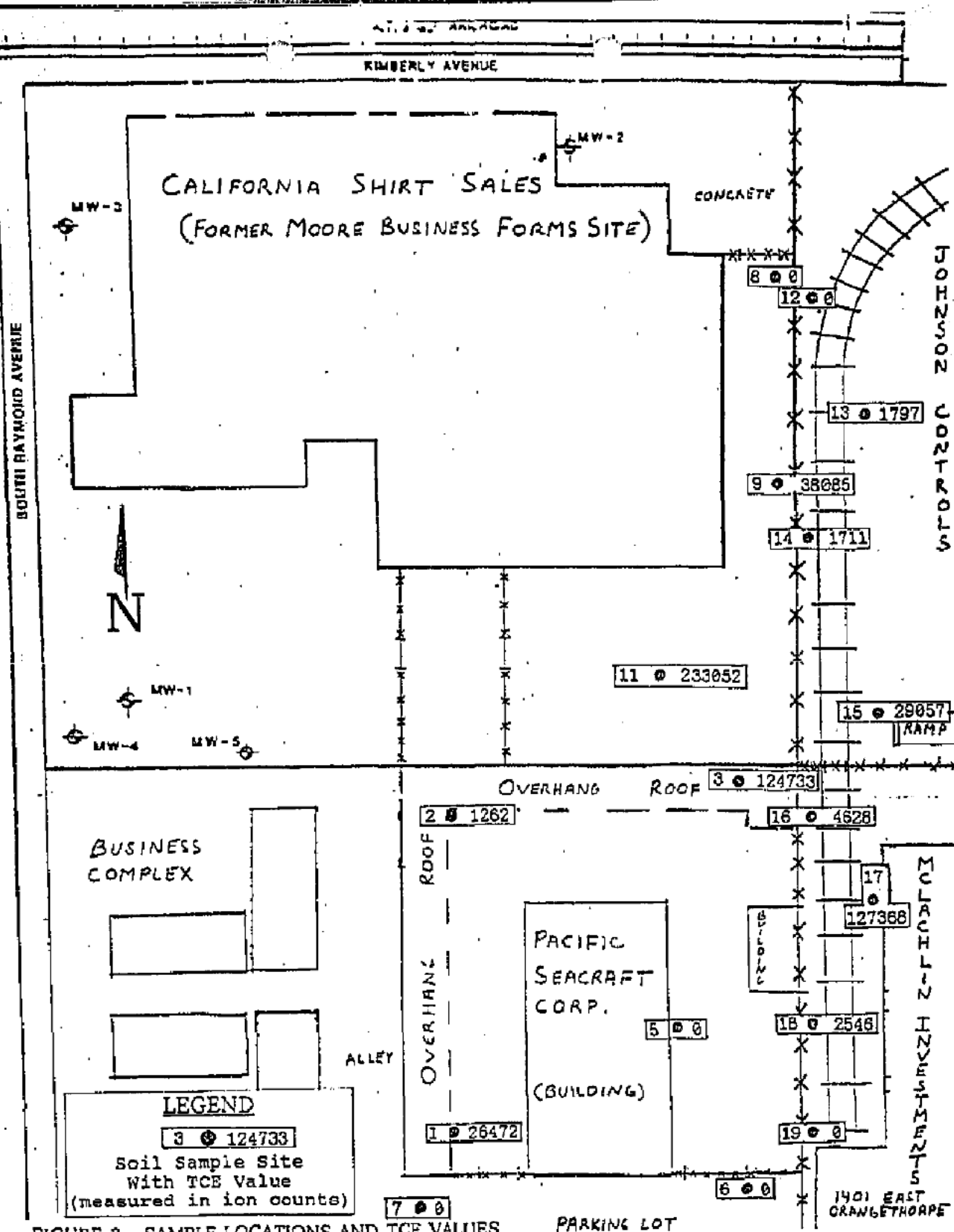


FIGURE 2 - SAMPLE LOCATIONS AND TCE VALUES

SOUTH RAYMOND AVENUE

KIMBERLY AVENUE

MW-3

CALIFORNIA SHIRT SALES
(FORMER MOORE BUSINESS FORMS SITE)

MW-2

CONCRETE

N

MW-1

MW-4

MW-5

8 • 232656

12 • 180399

13 • 14662

9 • 23584

14 • 10857

11 • 4176

15 • 25824

KAMP

OVERHANG ROOF

3 • 7141

2 • 4102

16 • 16822

BUSINESS
COMPLEX

ROOF

OVERHANG
ROOF

PACIFIC
SEACRAFT
CORP.

5 • 2032

17 •

115053

ALLEY

(BUILDING)

18 • 10488

19 • 3347

6 • 9673

1401 EAST
ORANGETHORPE

LEGEND

8 • 232656

Soil Sample Site
With PCE Value
(measured in ion counts)

7 • 12573

PARKING LOT

FIGURE 3 - SAMPLE LOCATIONS AND PCE VALUES

EXHIBIT 49

1 SUPERIOR COURT OF THE STATE OF CALIFORNIA

2 COUNTY OF ORANGE

3
4 ORANGE COUNTY WATER DISTRICT,)

5 Plaintiff,)

6 vs.)

No. 04CC00715

7 NORTHROP CORPORATION, et al.,)

8 Defendants.)

9
10
11
12
13
14
15 DEPOSITION OF WILLIAM DENNIS MERKLIN

16 Riverside, California

17 Tuesday, January 15, 2008

18 Volume 2

19
20
21
22
23 Reported by:

24 MARIANNA DONNER

CSR No. 7504

25 JOB No. 301528

1 operating by Quality Control Litho?

2 A Yes. That sounds very -- vaguely familiar.

3 Q What can you tell me about that site?

4 A That I worked on it.

5 Q You don't remember anything about the
6 contamination --

7 A No, I don't.

8 Q -- or cleanup?

9 Did you work on a Weber Aircraft facility?

10 A No, I didn't.

11 Q Weyerhaeuser?

12 A Weyerhaeuser, no.

13 Q On Sally Place?

14 A No, I don't think so.

15 Q Yorba Linda Center, does that ring a bell?

16 A No, it's not ringing a bell.

17 Q Has the regional board done any soil gas
18 surveys in the Anaheim/Fullerton area to locate
19 potential sources of VOC contamination?

20 A Yeah. The only one I can recall is the one
21 we did at Moore -- the Moore Business Forms site,
22 soil gas.

23 Q Apart from Moore's, have you done any
24 others?

25 A Yes, up in San Bernardino.

1 Q I'm sorry, bad question.

2 Have you done any in the Anaheim/Fullerton
3 area?

4 A No. No. Just that one at Moore.

5 Q Have you ever had any discussions with the
6 Orange County Water District about doing soil gas
7 surveys in the Anaheim/Fullerton Forebay area?

8 A Actually, no, I haven't. I don't recall us
9 discussing those.

10 Q Okay. Have you had any communications with
11 anybody at Northrop Grumman in the last two years?

12 A No, I haven't.

13 MR. SMITH: I don't have any further questions
14 at this time. Thank you.

15 THE WITNESS: Okay. Thank you.

16 THE VIDEOGRAPHER: Do you want to go off the
17 record?

18 MR. REFKIN: Yes.

19 THE VIDEOGRAPHER: Going off the record. The
20 time is 1:25 p.m.

21 (Off the record.)

22 THE VIDEOGRAPHER: Going back on the record.
23 The time is 1:27 p.m.

24

25

1 say that site for the McLachlan Investment Company
2 building of 1401 East Orangethorpe Avenue at one time
3 saw Northrop Corporation as an occupant from 1981 to
4 1990; is that right?

5 A That's correct.

6 Q And it was your understanding that Northrop
7 operated on that site a warehouse operation?

8 A That was, yeah, to my knowledge.

9 Q How did you acquire that information?

10 A I believe that came from the buyer of Moore
11 Business Forms site, Karl Sator. He had been in that
12 area all of his life. He knew about who used to be
13 there and who was here and how this looked like.

14 Q He was there from 1981 to 1990?

15 A Yes.

16 Q Right.

17 And then you mentioned that two other
18 companies, Memorex Corporation and Sylvania
19 Corporation, had operated machining and fabrication
20 operations at the site?

21 A Yes.

22 Q Was a source of your information also
23 Mr. Sator?

24 A Yes, it was.

25 Q Okay. Did you have any information that

1 Northrop conducted any operations using chlorinated
2 solvents at that site?

3 A At that site, no.

4 Q You mentioned that a hot spot was found as
5 depicted on Figure 2 in the northwest corner of the
6 McLachlan property.

7 A Yes.

8 Q And that was near some kind of loading dock?

9 A Yes. There's a loading dock in that corner.

10 Q Was that a loading dock that was part of the
11 McLachlan property or part of the railroad?

12 A It was part of the Moore Business Forms
13 property.

14 Q Oh. Look at 17.

15 A Oh, okay. You're talking about there. I'm
16 sorry.

17 Q Yes, down at 17.

18 A Yeah. Well, it is close to the railroad so
19 we can't really differentiate very well if it was due
20 to what was going on here at the site or if it was
21 from a spill on the tracks.

22 Q What railroad operated that line?

23 A I forget.

24 Q Is that the Atchison, Topeka, Santa Fe?

25 A Yeah, I believe it was. It's like a little

1 spur.

2 Q Were they ever contacted and asked to do any
3 kind of investigation?

4 A To my knowledge, no.

5 Q You mentioned earlier that this type of soil
6 gas survey provided qualitative, not quantitative
7 information.

8 A Yes.

9 Q What does that mean?

10 A It means -- "quantitative" means you can
11 quantify, you can get hard numbers, like analyzing
12 for a certain thing in water getting 5 parts per
13 billion, you know, of sodium in it.

14 Well, qualitative is more of a is it there
15 or not, is it there or not. It shows its presence.

16 Q Does it show in what degree it is present?

17 A By the ion counts, yes.

18 MR. SMITH: Okay. I don't have anything further
19 at this time.

20 MR. REFKIN: Can we just go off the record for a
21 moment?

22 THE VIDEOGRAPHER: Going off the record. The
23 time is 4:55 p.m.

24 (Off the record.)

25 MR. REFKIN: I would propose the same



Jan 20 2009
2:22PM

EXHIBIT 50

1 SUPERIOR COURT OF THE STATE OF CALIFORNIA

2 COUNTY OF ORANGE

3
4 ORANGE COUNTY WATER DISTRICT,)

5 Plaintiff,)

6 vs.)

No. 04CC00715

7 NORTHROP CORPORATION, et al.,)

8 Defendants.)

9
10
11
12
13
14
15 DEPOSITION OF MANECK CHICHGAR

16 Riverside, California

17 Wednesday, January 16, 2008

18 Volume 2

19
20
21
22
23 Reported by:

24 MARIANNA DONNER

CSR No. 7504

25 JOB No. 301509

1 MR. YOUNG: Kristopher Young on behalf of MAG
2 Aerospace.

3 MR. SMITH: Bob Smith for Northrop.

4 MR. AHARONIAN: Alex Aharonian on behalf of
5 Arnold Engineering Company.

6 THE VIDEOGRAPHER: Thank you.

7 Will the court reporter please swear in the
8 witness.

9 (Witness sworn.)

10 THE WITNESS: I do.

11
12 MANECK CHICHGAR,
13 having been first duly sworn,
14 was examined and testified as follows:

15
16 EXAMINATION

17 BY MR. MILLER:

18 Q Mr. Chichgar, you were kind enough to
19 provide us with a copy of your CV updated. We've
20 marked it as Exhibit 37. Is it current and accurate?

21 A Yes, sir.

22 Q There's a discussion of your experience as
23 an employee of Northrop Grumman Corporation I wanted
24 to go over. Your career started in '89 and ended in
25 '99, correct?

1 A Yes, sir.

2 Q You state during that period of time you
3 assessed over 49 company-owned or leased properties.
4 Within what geographical area were you doing such
5 assessments?

6 A Southern California and Arizona.

7 Q What portion of those 49 sites were in the
8 Anaheim/Fullerton area?

9 A I would be maximum -- and this is an
10 estimate on my part, at the maximum of three to four
11 facilities.

12 Q Would you have looked at all Northrop-owned
13 or leased sites in the Anaheim/Fullerton area at one
14 time or another or would you have only looked at some
15 of them?

16 A I would have looked at some of them.

17 Q Could you explain briefly your understanding
18 of the types of facilities that you would have been
19 asked to examine versus those you would not?

20 A I would not know the ones that I would not
21 have been asked to examine because I wouldn't know
22 what was there. The facilities that I remember are
23 the 301 and the 500 Orangethorpe. Then, and I can't
24 remember the name of the street, but it's the one if
25 I'm looking north, it was the one that was west of

1 the Y-12 facility on a back street back there north
2 of Y-12. Those are the only two that come to mind
3 right now.

4 Q Okay. During your career with Northrop, you
5 were responsible for activities associated with the
6 Y-12 site; is that correct?

7 A Yes, sir.

8 Q Did you have such responsibilities from the
9 time you went to work for Northrop in 1989?

10 A At Y-12, no, sir.

11 Q Can you tell me approximately when you first
12 started working on Y-12, best estimate, please?

13 A I would say in the '91, '92 time frame.

14 Q At the time you first started working on the
15 site, was it a site that was being regulated by the
16 State Regional Water Quality Control Board?

17 A I would say yes.

18 Q And once you started working on the Y-12
19 site, did you continue to work on matters related to
20 it until you left Northrop in 1999?

21 A Yes, sir.

22 Q Did you have any responsibilities or
23 assignments with respect to the EMD Northrop site?

24 A Like I mentioned earlier, I was on that site
25 only as an in-house consultant.

1 Q How did that differ from Y-12? Could you
2 explain the difference between your assignment at
3 Y-12 and being an in-house consultant at EMD?

4 A EMD was primarily being handled by the EMD
5 staff and corporate staff. I was just asked to sit
6 in on meetings and discussions; whereas at Y-12, I
7 visited the facility when it was operational, and
8 then when it was due for closure it was assigned to
9 me.

10 Q It was a project of yours?

11 A Yes, sir.

12 Q Would you call that a project manager or
13 what term would be accurate?

14 A Yes, sir.

15 Q Yes, you were a project manager?

16 A Yes, sir.

17 Q Okay. And were there any other sites where
18 you were the project manager for Northrop in Anaheim
19 or Fullerton that we haven't discussed?

20 A Like I mentioned, the one facility that was
21 on the back, I think it was Liberty -- I'm only
22 guessing. I think it's Liberty, but I may be wrong,
23 Liberty Street or Liberty Avenue. I'm not -- not
24 exactly sure, but I think that's what rings a bell.

25 Q What type of facility was the facility that

EXHIBIT 51



Jun 19 2008
2:52PM

Duane C. Miller, #57812
Michael D. Axline, #229840
A. Curtis Sawyer, Jr., #101324
Tamarin E. Austin, #207903
MILLER, AXLINE & SAWYER
A Professional Corporation
1050 Fulton Avenue, Suite 100
Sacramento, CA 95825-4272
Telephone: (916) 488-6688
Facsimile: (916) 488-4288

(Exempt from filing fees
per Govt. Code, § 6103)

Attorneys for Plaintiff
Orange County Water District

SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ORANGE

ORANGE COUNTY WATER DISTRICT,

Plaintiff,

v.

NORTHROP CORPORATION; NORTHROP
GRUMMAN CORPORATION; AMERICAN
ELECTRONICS, INC.; MAG AEROSPACE
INDUSTRIES, INC.; GULTON
INDUSTRIES, INC.; MARK IV
INDUSTRIES, INC.; EDO CORPORATION;
AEROJET-GENERAL CORPORATION;
MOORE BUSINESS FORMS, INC.; AC
PRODUCTS, INC.; FULLERTON
MANUFACTURING COMPANY;
FULLERTON BUSINESS PARK LLC; and
DOES 1 through 400, inclusive,

Defendants.

CASE NO. 04CC00715

**PLAINTIFF'S RESPONSE TO
NORTHROP GRUMMAN SYSTEMS
CORPORATION'S REQUESTS FOR
ADMISSIONS SET TWO**

Department: CX104

Complaint Filed: November 17, 2004

Trial Date: February 2, 2009

Honorable Thierry P. Colaw

1 bounds the relevant area on the East between Imperial Highway and N. Tustin Street. North Tustin
2 bounds the area between E. Nohl Ranch Road and the Southern boundary, Katella. Katella bounds
3 the area between N. Tustin and Magnolia. Plaintiff further objects to the extent the request asks
4 plaintiff to provide a detailed analysis of plume extent and migration where investigation is
5 ongoing and expert witnesses have not yet been exchanged. Plaintiff further objects to the extent
6 the request asks plaintiff perform an analysis of documents, including those Northrop refuses to
7 produce and those produced by public entities and third parties and maintained by entities other
8 than the District. The District objects to this request to the extent it seeks privileged or confidential
9 information, including information encompassed by the attorney-client and attorney work product
10 privileges (including documents prepared by litigation consultants). (*See Sporck v. Peil* (3rd Cir.
11 1985) 759 F.2d 312, 315 and *Dowden v. Superior Court* (1999) 73 Cal.App.4th 126.) The District
12 objects to the extent this request asks for information subject to the deliberative privilege.
13
14

15 Without waiving these objections, the First Amendment to the First Amended Complaint
16 speaks for itself. Northrop's records produced in discovery in this case demonstrate that it has
17 owned and/or operated (and had releases of solvents) at sites that fall within the relevant scope of
18 the litigation (as defined by Northrop) South of the 91 Freeway, including the sites located at 1541
19 Page Court and 1011 East Street. On that basis, the District denies this request.
20
21

22 **REQUEST FOR ADMISSION NO. 112:**

23 Admit that OCWD's proposed treatment system is not intended to treat groundwater
24 contamination that remains south of the 91 Freeway.

25 **RESPONSE TO REQUEST FOR ADMISSION NO. 112:**

26 Plaintiff incorporates the general objections. The phrase "proposed treatment system" is
27 vague and ambiguous. The term "remains" is also vague and ambiguous. Questions concerning the
28

1 District's damages claims, including the treatment necessary to address contamination in the
2 relevant scope of the litigation, are matters requiring expert opinion and analysis. Plaintiff further
3 objects to the extent the request asks plaintiff to provide a detailed analysis of plume extent and
4 migration where investigation is ongoing and expert witnesses have not yet been exchanged.
5 Plaintiff further objects to the extent the request asks plaintiff perform an analysis of documents,
6 including those Northrop refuses to produce and those produced by public entities and third parties
7 and maintained by entities other than the District. The District objects to this request to the extent
8 it seeks privileged or confidential information, including information encompassed by the attorney-
9 client and attorney work product privileges (including documents prepared by litigation
10 consultants). (See *Sporck v. Peil* (3rd Cir. 1985) 759 F.2d 312, 315 and *Dowden v. Superior Court*
11 (1999) 73 Cal.App.4th 126.) The District objects to the extent this request asks for information
12 subject to the deliberative privilege.
13
14

15 Without waiving these objections, the District admits that David Mark, the District's
16 Person Most Qualified to discuss the selection of the North Basin Groundwater Protection Project
17 as a remedial option, testified that, with respect to the North Basin Groundwater Protection Project
18

19 Q. With Plate 1 of your report in front of you, can you tell me, is
20 there any portion of Orange County -- the Orange County basin
21 south of the 91 Freeway that you intend to treat as part of the
22 remediation program?

23 A. Not as part of this project.

24 Northrop has admitted to releasing solvents in the area South of the 91 Freeway, but refused to
25 provide discovery to date concerning those sites and releases. The District has insufficient
26 information at this time to determine whether additional remediation will be necessary in the area
27 South of the 91 Freeway (where Northrop has admitted releasing solvents), and therefore admits
28

1 that, as of the time of responding to these requests for admissions, it has not proposed additional
2 treatment in that area. The District's investigation and discovery continue.

3 **REQUEST FOR ADMISSION NO. 113:**
4

5 Admit that OCWD is not seeking damages relating to the OCWD proposed treatment
6 system for any properties south of the 91 Freeway.

7 **RESPONSE TO REQUEST FOR ADMISSION NO. 113:**
8

9 See objections and response to Request for Admission No. 112.
10

11 Dated: June 19, 2008

MILLER, AXLINE & SAWYER
A Professional Corporation

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14 By:

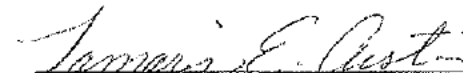

TAMARIN E. AUSTIN
Attorneys for plaintiffs
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EXHIBIT 52

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF ORANGE

-oOo-

COPY

ORANGE COUNTY WATER DISTRICT,
Plaintiff,

vs.
NORTHROP CORPORATION; et al.,
Defendants.

No. 04CC00715

DEPOSITION OF DAVE MARK, P.G., C. HG.
VOLUME III
January 30, 2008 at 10:00 (10:18) a.m.
Before: ERIC L. JOHNSON
RPR, CSR #9771

Taken at:
Costa Mesa, California

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1 interested in. In the first sentence you say, quote,
2 "Various investigations conducted by Orange County Water
3 District, OCWD, and others have revealed that
4 groundwater in the northern portion of the Orange County
5 groundwater basin generally north of the 91 Freeway,
6 west of the 57 Freeway, east of Magnolia Avenue and
7 south of Chapman Avenue, figure E-S1, is contaminated
8 with volatile organic compounds, VOCs, that are
9 constituents of industrial degreasing solvents."

10 And then you go on to say it is an
11 approximately 11-square-mile area.

12 Is that a geographic description of the project
13 area?

14 A. In general.

15 Q. With Plate 1 of your report in front of you,
16 can you tell me, is there any portion of Orange
17 County -- the Orange County basin south of the 91
18 Freeway that you intend to treat as part of the
19 remediation program?

20 A. Not as part of this project.

21 Q. Is there any area north of Chapman Avenue that
22 you intend to treat as part of this remediation project?

23 A. Well, assuming the extent of VOCs doesn't go
24 that far to the north, I hope we don't have to, but we
25 recently installed a monitoring well that may provide

1 STATE OF CALIFORNIA)
2 COUNTY OF STANISLAUS) ss.

3 I, ERIC L. JOHNSON, do hereby certify that I am a
4 licensed Certified Shorthand Reporter, duly qualified
5 and certified as such by the State of California;

6 That prior to being examined, the witness named in
7 the foregoing deposition was by me duly sworn to testify
8 to tell the truth, the whole truth, and nothing but the
9 truth;

10 That the said deposition was by me recorded
11 stenographically at the time and place herein mentioned;
12 and the foregoing pages constitute a full, true,
13 complete and correct record of the testimony given by
14 the said witness;

15 That I am a disinterested person, not being in any
16 way interested in the outcome of said action, or
17 connected with, nor related to any of the parties in
18 said action, or to their respective counsel, in any
19 manner whatsoever.

20

21 DATED: February 10, 2008

22

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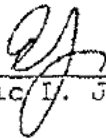

Eric L. Johnson, CSR, RPR

EXHIBIT 53

NORTHROP

Northrop Corporation
One Northrop Avenue
Fowler, California 90701-1177

December 4, 1991

Command and Control Battalion Chief
Los Angeles County Fire Department -
Dispatch
1320 North Eastern
Los Angeles, CA 90063

Subject: Report of Hazardous Materials - 500 East
Orangethorpe, Anaheim, CA

To Whom It May Concern:

On November 12, 1991, at approximately 3:30 pm, an anonymous telephone call was placed to the Los Angeles County Fire Department Dispatch alleging the presence of radioactive materials buried under property owned by Northrop Corporation at 500 East Orangethorpe, Anaheim, CA. This call was routed to the City of Anaheim Fire Department, Fire Prevention Division, Environmental Protection Section. Representatives of the City of Anaheim Fire Department arrived at the above property at approximately 4:30 pm on November 12 and closed operations at the site.

The specific allegation made in the telephone call was that radioactive materials had been intentionally buried at a forty-foot level beneath or adjacent to a helicopter landing pad on the property. Subsequent investigation has determined that the telephone allegation was without merit. A final report reflecting such conclusion is presently being drafted by the City of Anaheim Fire Department.

Northrop Corporation is interested in investigating the circumstances surrounding this telephone conversation and is interested in obtaining a copy of the November 12, 1991 tape on which this telephone call is recorded. Northrop Corporation is willing to pay whatever charges are incurred in obtaining a duplicate of this tape. Please inform me of any special requirements or charges necessary to obtain a copy of the tape. I can be reached at (310) 331-4826.

Very truly yours,


Thomas F. Daly
Staff Environmental Counsel

TFD318.91

NGSC39165

EXHIBIT 54



McLaren Environmental Engineering

October 14, 1988

Ms. Georgetta Wolff
Division Legal Counsel
Northrop Corporation
Electro-Mechanical Division
Department 110
500 East Orangethorpe Avenue
Anaheim, California

PHASE 2 INVESTIGATION REPORT ENVIRONMENTAL ENGINEERING SPECIFICATION
#88001

Dear Ms. Wolff:

As requested by Mr. Ken Erwin, we are submitting, for your distribution, ten (10) copies of the Phase 2 Investigation Report at the NEMD Anaheim facility. Should you have any questions regarding this report, please do not hesitate to contact me or Bruce Ehleringer.

Sincerely yours,

Douglas W. Jones, P.E.
Vice President

C.E. 6. 1114

Enclosure

EXHIBIT 55

California Regional Water Quality Control Board
Santa Ana Region

INTERNAL MEMO

TO: FILE

FROM: WDM

DATE: April 5, 1991

SIGNATURE Walter Woo

SUMMARY OF MEETING
NORTHROP EMD - ANAHEIM
April 1, 1991

On April 1, 1991, representatives from the Northrop Electro-Mechanical Division (EMD) in Anaheim, met with staff members of the Santa Ana Regional Water Quality Control Board (SARWQCB) in the construction trailer at the demolished Northrop EMD site, as part of the ongoing updating and review process for the soil remediation work at the site of the former Anodic Room. Present at the meeting were Robert Holub and Dennis Merklin of the SARWQCB; Ken D. Erwin, Alec Uzemeck, Norm Sealander, David Woo and Barbara Roach of Northrop EMD; and Walter Woo and Brad Grow of AWD. The purpose of the meeting was for the Northrop and AWD staff to present their current status and progress of the soil borings and vapor extraction system for the proposed TCA contaminated soil investigation and remediation. In addition, they wanted to show us the affected area itself, along with the soil borings, extraction and intake wells, piping system, carbon filtration units and all the other ancillary equipment and parts to make this an effective soil remediation operation. Most of the systems' parts have been installed. The pilot tests have been completed with success. They are waiting primarily for the emissions permit from the AQMD.

We toured the area of the VOC remediation site and most of the equipment was there, ready for use. There are three areas which will be remediated individually by three systems, thus there will be three emission points. Two areas will be run by 500 cfm blowers and one area with a 100 cfm blower. There were 39 wells installed for extraction, with a total of 50 well which include the intake wells. The original vapor extraction well is also connected to the system. There is a 50 foot radius of influence for each extraction well, so there will be overlap to reach all the spots in the area. The extraction wells are screened from 10 feet to 60 feet below grade, while the injection wells are screened between 35 feet and 42 feet, where a fine grained layer exists. The system appeared adequate.

Finally, Northrop said that they will send us the report of the Anodic Room investigation and a detailed work plan for remediation

EXHIBIT 56

1 IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
2 IN AND FOR THE COUNTY OF ORANGE

3 -oOo-

4 ORANGE COUNTY WATER DISTRICT,
5 Plaintiff,

6 vs.

No. 04CC00715

7 NORTHROP CORPORATION; et al.,
8 Defendants.

9 _____ /

10
11
12 DEPOSITION OF DAVID F. WONG
13 VOLUME I

14 April 21, 2008 at 10:00 (10:06) a.m.

15 Before: ERIC L. JOHNSON
16 RPR, CSR #9771

17 Taken at:
18 Costa Mesa, California
19
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1 Q. What law firms?

2 MS. MCKEITH: If you recall.

3 THE WITNESS: I don't recall.

4 MR. MILLER: Q. Was the Lewis firm that is
5 representing you this morning one of the firms?

6 A. I don't believe so, no.

7 Q. I would like to understand what your assignment
8 was before you went to corporate headquarters in 1990.
9 Could you share that with us, please.

10 A. I was part of the environmental group that
11 handled environmental affairs for at that time the
12 aircraft division of Northrop Grumman Corporation or, at
13 that time, Northrop Corporation.

14 Q. And did that include any of the sites in
15 Fullerton or Anaheim that Northrop had previously
16 occupied?

17 A. Not directly.

18 Q. When is the first time that you were ever
19 associated with any of those sites by virtue of your
20 employment with Northrop?

21 A. Well, throughout Northrop at that time there
22 were various divisions and environmental people who
23 would be -- had worked in those divisions, so I was
24 familiar with the engineers and group at the various
25 divisions.

1 Q. When you started work in the environmental
2 group in 1984 for Northrop, were you assigned to review
3 reports concerning any particular sites?

4 A. No.

5 Q. Were you involved in inspecting sites?

6 A. Inspections for what?

7 Q. To determine if there was environmental
8 contamination or conditions that could create
9 environmental contamination.

10 A. In my position with Northrop was -- initially I
11 was hired from the California Department of Health
12 Services, and part of the responsibility that I was
13 hired for was for facilities that handled hazardous
14 materials. Part of that would involve the inspection of
15 facilities at that point, Northrop facilities, to make
16 sure that they met the regulatory requirements.

17 Q. Were you previously employed by the California
18 Department of Health Services?

19 A. I just said that. Yes.

20 Q. And what was your position with them?

21 A. The formal title was Hazardous Materials
22 Management Specialist, I believe.

23 Q. And how long were you with them?

24 A. Approximately six years.

25 Q. And did you have any responsibility for sites

1 in Southern California during your employment with the
2 state?

3 A. Our office had the Southern California region,
4 so they would have -- as an office, have a large area in
5 Southern California.

6 Q. Before you went to Northrop, were you familiar
7 with the use of solvents by industry?

8 A. I was aware of solvent use by industry.

9 Q. Were you aware of which solvents were
10 considered hazardous before you went to work at
11 Northrop?

12 A. Yes. Department of Health Services identified
13 a listing of hazardous materials that would be required
14 to be regulated by agencies, and held to various levels
15 and requirements by companies that used them.

16 Q. And before you went to work with Northrop, were
17 you familiar with the fact that some of these solvents
18 were not only considered hazardous materials but were
19 showing up in drinking water wells?

20 A. I was aware of that situation, yes.

21 Q. Did that include the chemical TCE,
22 trichloroethylene?

23 A. Yes.

24 Q. What other solvents were you familiar with
25 before you went to work for Northrop that were

1 that title.

2 A. Yeah, if I -- according to what it says here.

3 Q. Do you know of any reports Northrop prepared
4 concerning the Y-12 site that would have been listed as
5 classified, that is, that they contained government
6 secret information?

7 A. I am not aware of any.

8 Q. Same question for the Electronics Systems
9 Division property -- the 53 Anaheim -- 53 acre Anaheim
10 property.

11 Have you ever seen any classified information
12 concerning that site?

13 A. No.

14 Q. Were there activities involving radionuclide at
15 any of these properties?

16 A. I was not familiar with that activity, no.

17 Q. On the cover sheet it says, "Access, need to
18 know." What did that mean?

19 A. I don't know. This is a standard cover sheet
20 that was provided.

21 Q. And then under "Need to know," it says,
22 "Designation by supervision." Did that mean only
23 supervisors could see it, and then only if they needed
24 to know?

25 A. I am not familiar with the specifics or the

1 policies of this document.

2 Q. Does Northrop have a policy that explains what
3 should be labeled "Northrop Private," something in
4 writing?

5 A. I believe there is.

6 Q. Does Northrop have something that sets forth
7 its policies concerning environmental cleanups at its
8 properties?

9 MS. MCKEITH: Asked and answered; vague as to
10 time. You can answer, based on the 20 years, 25 years
11 now you have been at Northrop, whether it has a written
12 policy.

13 THE WITNESS: We -- again, during my years with
14 Northrop Grumman, we have an environmental health and
15 safety policy that is in existence at this point, and
16 various copies of it would have been in place in the
17 earlier case. I can't recall the specifics of the
18 policy. But in effect, it would be a general
19 environmental policy for a good -- that identifies
20 Northrop ethics and management of their activities in
21 accordance with environmental standards.

22 MR. MILLER: Q. Did you understand that it was
23 your job as a Northrop employee to follow those
24 policies?

25 A. Yes.

1 Q. And since you are in corporate, was there
2 always a version of that policy in writing, or is that
3 something that happened later?

4 A. I can't recall. I know that there's been this
5 general policy for a while, but I can't tell you when it
6 was formally implemented, per se.

7 Q. Okay. Let's go into Mr. Chichgar's report on
8 Y-12, Bates page 7078. Page 2 of 6 of the text.

9 In the last paragraph, under "Manufacturing
10 Area" it states, "The vapor degreaser exists and has
11 been in operation for 25-plus years in the south central
12 portion of this area. Trichloroethylene is used as the
13 degreasing agent. The approximate dimensions of the
14 vapor degreaser is approximately 36 feet by 4 feet by 8
15 feet deep."

16 Is that consistent with your understanding?

17 A. I was not familiar with the particular unit nor
18 the area.

19 Q. It also describes a pit to contain spills. And
20 it was concrete, it was 43 feet by 12 feet by 10 feet
21 deep. And it says, "The condition of the concrete pit
22 bottom could not be inspected because entrance into the
23 pit requires wearing a respirator."

24 Do you see that?

25 A. Yes.

1 information that chemicals may have been dumped or
2 disposed of at that location?

3 MS. MCKEITH: Objection. Same objection. I am
4 going to instruct him not answer the question as worded.

5 MR. MILLER: Mark it.

6 MR. MILLER: Q. Sir, would you be familiar
7 with Northrop's policies on the need to investigate
8 areas before they sell property?

9 A. Yes, our general policy is to investigate all
10 our properties prior to any transfer. We do that and
11 provide that documentation to assure both the buyer and
12 ourselves that we are leaving the property in
13 appropriate condition.

14 Q. And you supervise people that are responsible
15 for doing that work, correct?

16 A. No, not at this time.

17 Q. Did you in the past?

18 A. To a certain degree. Again, the primary
19 responsibility was the division who had the site. We
20 would provide oversight with the Division Environmental
21 manager, and provide our input as needed.

22 Q. Well, this document is dated July 14th, 1992.
23 During that time period you would have been provided
24 oversight to the Y-12 facility?

25 A. They would provide summaries. I received

EXHIBIT 57

1 SUPERIOR COURT OF THE STATE OF CALIFORNIA

2 COUNTY OF ORANGE

3
4 ORANGE COUNTY WATER DISTRICT,)

5 Plaintiff,)

6 vs.)

No. 04CC00715

7 NORTHROP CORPORATION, et al.,)

8 Defendants.)

9
10 AND OTHER RELATED ACTIONS.)

11
12
13
14
15 DEPOSITION OF ROBERT HOLUB

16 Riverside, California

17 Tuesday, May 27, 2008

18 Volume 1

19
20
21
22
23 Reported by:

LAURIE HELD-BIEHL

24 CA CSR No. 6781

TX CSR No. 8555

25 JOB No. 301760

1 characterize his work?

2 A In the early years when he first started his
3 work was -- I would characterize it as high-quality
4 work.

5 Q And can you estimate for me when those early
6 years were?

7 A No.

8 Q Do you know whether they were in the '80s as
9 opposed to the '60s or '70s?

10 A They would have been in the '80s.

11 Q Now, you were the senior WRCE from the early
12 '80s to the mid-'90s. Did you supervise Mr. Merklin
13 during that time?

14 A Yes.

15 Q Okay. And during that time period when you
16 were the senior WRCE how would you describe the
17 quality of his work?

18 A During the early years of his employment his
19 work was very high quality. He was considered one of
20 the best performers in the section.

21 Q Okay. Now, can you describe for us
22 generally what is the role of the Santa Ana Regional
23 Water Quality Control Board, what does it do?

24 A Again, generally we are the state regulatory
25 agency regarding California's water rights and water

1 quality program and our role is to protect and
2 enhance the water quality of the state and to enforce
3 state and applicable federal Clean Water Act
4 regulations and policies.

5 Q I gather that you've heard of the Orange
6 County Water District?

7 A Yes.

8 Q What is your understanding of its role?

9 A Very briefly, Orange County Water District
10 manages the Orange County Groundwater Basin.

11 Q And when you say "manages," what do you mean
12 by that?

13 A They have an affiliation with all the water
14 producers in the region and they work with them
15 overseeing the pumping rates in the basin, looking at
16 the quantity and quality of water in the basin and
17 for future water supplies and working towards that
18 end.

19 Q To your understanding does the Regional
20 Board have the power to order a property owner to
21 conduct an investigation of its site?

22 A Yes.

23 Q And to your understanding does the Regional
24 Board have the authority to order a prior owner of a
25 property to conduct an investigation on a site that